

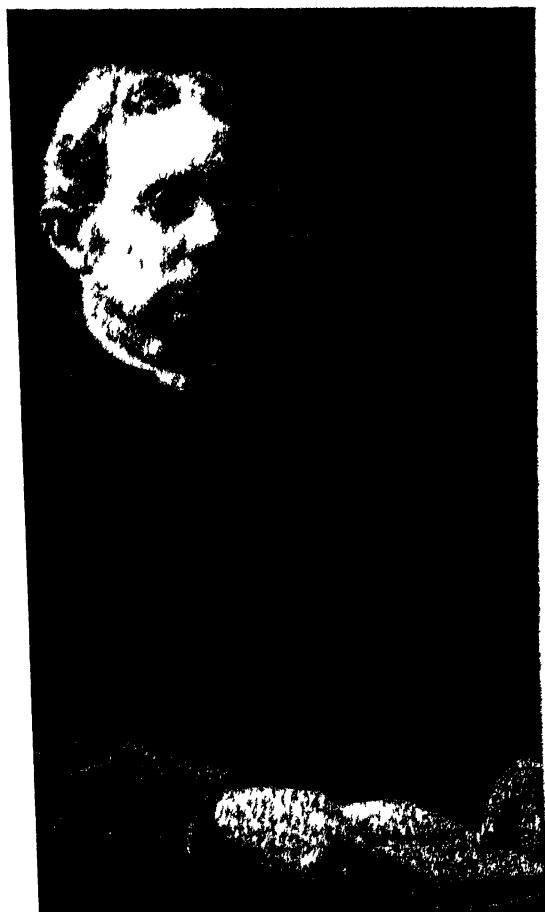


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REV CANON BLACKBURN, BA





# CONTENTS.

	Page.
LEA, A. M.: The late Rev. Canon Thomas Blackburn, B.A., and his Entomological Work ( <i>with Portrait</i> ) . . . . . v. to xl.	
GRANT, KERR, and JAUNCEY, G. E. M.: The Ionization Pro- duced by the Impact of Solid Bodies in Air . . . . .	1
HOWCHIN, W.: On an Outlier of Older Cainozoic Rocks in the River Light, near Mallala . . . . . Plate i.	14
BLACK, J. M.: Additions to the Flora of South Australia. Plates ii and iii. . . . .	21
STIRLING, DR. E. C.: Observations on the Habits of the large Central Australian Monitor ( <i>Varanus giganteus</i> ), with a Note on the "Fat Bodies" of this Species. . . . . Plate iv.	26
HOWCHIN, W.: Notes on Recurrent Transgressions of the Sea at Dry Creek . . . . .	34
BLACKBURN (the late), REV. CANON: Further Notes on Aus- tralian Coleoptera, with Descriptions of New Genera and Species. . . . . No. xlii.	40
LEA, A. M.: Descriptions of Australian Curculionidæ, with Notes on Previously Described Species. . . . . Part x.	76
TORR, DR. W. G.: South Australian Polyplacophora. Plates v. to vii . . . . .	140
BLACK, J. M.: Additions to the Flora of South Australia. Plate viii. . . . .	171
BROUGHTON, A. C.: Notes on some Occurrences of Silica near Mount Painter, Flinders Ranges . . . . .	173
ZIETZ, F. R.: Descriptions of Wild Hybrids of Australian Ducks contained in the S.A. Museum Collection. Plate ix. . . . .	178
VERCO, DR. J. C.: Notes on South Australian Marine Mollusca, with Descriptions of New Species. . . . . Part xv. Plates xv. (in part) and xvi. (in part) . . . . .	181
— Notes on the Marine Shells of Western Australia, with Descriptions of New Species. . . . . Part ii. Plates xv. (in part) and xvi. (in part) . . . . .	192
— Shells from the Great Australian Bight. . . . . Plates x. to xiv. and xvi. (in part) . . . . .	206
KNAB, F., and MALLOCH, J. R.: New Australian Diptera from Ants' Nests . . . . .	233
ABSTRACT OF PROCEEDINGS . . . . .	238
ANNUAL REPORT . . . . .	246
BALANCE-SHEETS . . . . .	248
DONATIONS TO THE LIBRARY . . . . .	250
LIST OF FELLOWS, ETC. . . . .	261
APPENDICES—	
Annual Report, etc., of the Field Naturalists' Section . . . . .	264
Twenty-fourth Annual Report of the Native Fauna and Flora Protection Committee of the Field Naturalists' Section . . . . .	268
Annual Report, etc., of the Malacological Section . . . . .	270
Annual Reports, etc., of the Microscopical Section. 1910-11 and 1911-12 . . . . .	271
GENERAL INDEX . . . . .	275



THE LATE REV. CANON THOMAS BLACKBURN, B.A.,  
AND HIS ENTOMOLOGICAL WORK.

(*With portrait.*)

By ARTHUR M. LEA.

[Read October 10, 1912.]

There passed away at Woodville, near Adelaide, on May 28, 1912, a quiet and unassuming naturalist in the person of Thomas Blackburn; and with him Australia lost one of its best entomologists. Although formerly well known in England, and later doing good work in Honolulu, it was nevertheless in Australia that most of his work was done.

He was born at Islington, near Liverpool, on March 16, 1844. Matriculated at London University in 1866 and took his B A. degree in 1868. For a time he was in the Imperial Civil Service, having gained first place in a competitive examination for a position in the Department of the Secretary for Inland Revenue, but he soon left it for the Church of England. He was ordained a Deacon by the Bishop of Manchester in May, 1869, and the following May as a Priest. He had charge of the Parish of Greenhithe, 1870-76. Thence he was transferred to Honolulu, where he remained for six years as Senior Priest and Chaplain to the Bishop. He then came to Australia and took charge as Rector of St. Thomas', at Port Lincoln, in 1882. In 1886 he was appointed Rector of St. Margaret's, at Woodville—a position he retained for the remainder of his life. A few years ago he was also appointed Honorary Canon of St. Peter's Cathedral in Adelaide.

He was twice married. First, in August, 1870, to Jessie Anne Wood, daughter of C. W. Wood, Q.C., of Wandsworth, England, by whom he had three sons: Gavin Wordsworth, now at Vancouver; Charles Bickerton, now in Sydney; and Edward Forth William, now at Wagin, in Western Australia. His first wife died in May, 1885. In September, 1886, he married Margaret Harriette Stewart Browne, daughter of John Stewart Browne, S.M., of Port Lincoln, by whom he had three sons and a daughter: John Stewart, Harry Kenneth Baines, Margaret Browne, and Arthur Seaforth. His second wife died in 1904, but all their children are now resident at Woodville.

For the greater portion of his life he enjoyed good health, but severe rheumatism and other constitutional weaknesses marred some of his later years and interfered considerably with both his parish and entomological work. The Sunday preceding his death he was preparing to conduct morning service at his church when he was stricken down with paralysis, from which he never recovered, passing quietly away a week afterwards.

He was essentially a busy man, and devoted the best of his time and efforts to his parish duties. As a consequence he was seldom able to start entomological work till about 9 p.m., and such work on hot summer nights must have been very trying.

In Honolulu he published two works; the first, entitled "Visions of the King," a book of sermons, and the second, entitled "True and False Issues between Christianity and Science," the substance of a course of lectures that he delivered in Honolulu.

He also wrote two musical cantatas, the first entitled "The Story of the Crucifixion," and the second, "The Story of Calvary." In his spare time, and when travelling, he also composed some poetical pieces, mostly of a religious nature.

I applied to Dr D. Sharp for some particulars of his early life in England, and, in reply, he wrote:—"He began very young. Fifty years ago he came into notice. The first note published appears to be one in conjunction with his brother, J. B. Blackburn—a list offering various Lepidoptera in exchange for *Noctuidæ*, to which they had then resolved to limit their collection. This note appeared in 'The Entomologists' Weekly Intelligencer,' November 24, 1860. In 1861 'The Weekly Intelligencer' was abandoned by its hitherto editor, H. J. Stainton, and after an interval of nine months the two Blackburns published and edited 'The Weekly Entomologist,' the first number of which appeared in August, 1862. It was continued for two years, and then gave place to the present 'Entomologists' Monthly Magazine,' of which Mr. Blackburn was one of the original editors. In 1862 he appears to have been Secretary of the Bowdon and Altrincham Entomological Society. His first note on Coleoptera appeared in 'The Weekly Entomologist' of January, 1863, and was a list of captures of Coleoptera during 1862. At this period his entomological work was chiefly of a minor character, but he published a great many notes."

When only a boy he received encouragement from Mr. C. O. Waterhouse, of the British Museum, and it was pos-

sibly through his influence that his attention was diverted from the Lepidoptera to the Coleoptera.

When in England he contributed many notes to entomological publications, and especially to "The Weekly Entomologist." About half of the leaders of that rather short-lived publication were from his pen. The leaders were not published with their writers' names, but in his own bound copy of that publication the author's initials are marked in pencil, some of his own being on such diverse subjects as "Union is Strength," "Wanted, Entomologists!" "Discoveries," "Notes from Lacordaire," "Mites," "The Natural History of the Tineina," "Nunquam Moriemur Inusti."

He was then nineteen years of age! After his transfer to Honolulu he also wrote a few notes on insects. But in Australia, except for a paper read before a meeting of the Australasian Association for the Advancement of Science held in Adelaide, he confined himself to descriptive work.

He began his work on Lepidoptera in England, but soon afterwards took up the Coleoptera. After his transfer to Honolulu he collected insects of all Orders, and many of these he worked out, either alone or in collaboration with Messrs. Cameron and Kirby and Dr. Sharp. He also sent numerous specimens from the Hawaiian Islands to various specialists, who published the results, and in this way it was from his work alone that the insect fauna of that interesting group of islands became very well known in comparison to what it was before. After landing in Australia, however, he practically dropped all work on insects other than beetles, such specimens of a general kind that came in his way he simply handed over to the South Australian Museum.

As previously stated, Mr. Blackburn arrived in Australia in 1882, and his first paper was contributed to the Royal Society of South Australia in 1887. In 1888 he contributed his first paper to the Linnean Society of New South Wales, to which Society he was elected a Corresponding Member in the same year. For some years also he belonged to the Australasian Association for the Advancement of Science, and for many years he was Honorary Curator in Entomology to the South Australian Museum.

His descriptions were drawn up with great care, the diagnosis being in Latin, followed by comparative notes in English.

In his early years in Australia he made large collections in the Port Lincoln district, and after his transfer to Woodville he collected in that neighbourhood, and also made special collecting trips to Oodnadatta and other districts in South Australia.

Of late years he usually made an annual trip to one of the other States, New South Wales and Victoria being often visited. But the specimens obtained on these trips represented a comparatively small fraction of the total he examined. He had all the beetles of the South Australian Museum at his disposal, and thousands of these bear labels in his writing. He examined all the beetles taken on the Elder Expedition,<sup>(1)</sup> the Horn Expedition, Mr. Zietz's trip to Lake Callabonna, etc. For many years specimens were sent to him at such an accelerating rate that he found he could not spare time to attend to all of them, and in consequence of late years his entomological correspondence was considerably curtailed.

In his early years in Australia some of his finest species were sent by the late Sir William Macleay, by the late Mr. George Masters, and the late Mr. A. S. Olliff. Mr. French sent him many fine *Buprestidae*, *Cerambycidae*, and other showy insects to be named. He obtained a fine lot of Western Australian insects in exchange with Mr. Meyrick for some Lepidoptera from the Hawaiian Islands. Mr. Bailey, the Queensland Botanist, sent him many specimens. Messrs. Koebele and Perkins also gave him many specimens from New South Wales and Queensland, especially from the north. From the late Dr. Bovill he obtained many species from the Northern Territory. Mr. Aug. Simson contributed largely from Tasmania. Mr. T. G. Sloane, Mr. H. H. D. Griffith, the late Professor Tate, his own children, and myself gave him species from various parts of Australia, but probably every worker at Australian Coleoptera during the past twenty-five years sent him specimens at one time or another.

He was a systematist, pure and simple, taking no interest, or, at any rate, very little, in the life histories of the insects themselves: although in his earlier days he appeared to have been interested in the transformation of Lepidoptera.

He worked at most families of beetles at various times, both from interest in them and from working through collections taken during various expeditions; but of late years he had almost confined himself to the *Scarabæidae*, a family that had always been first favourite with him. He was, however, preparing to work through the *Elateridae*, and was arranging his collection of that family when his call came.

Groups that would have presented insurmountable difficulties to many entomologists he attacked conscientiously; thus the largest and most difficult genus of all Australian

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(1) A Mountain in Central Australia discovered during the Elder Expedition was named after him.

beetles—*Paropsis*—was well worked out; so also was the next most difficult—*Heteronyx*. To the latter genus he returned again and again; but of *Paropsis* he told the present writer that he never wished to look at it again. Other large and difficult genera such as *Lacon*, *Monocrepidius*, *Liparetrus*, *Amarygmus*, *Chalcopterus*, *Monolepta*, and many others, were worked through, in most cases tables being given to render the species more readily identifiable.

Following is a list of his entomological publications, totalling 3,696 pages, not including short notes:—

*In Entomologists' Monthly Magazine:—*

Vol. 13—Four Species of *Helophorus* New to Britain, pp. 39, 40. Insect Notes from the Sandwich Islands, pp. 227, 228.

Vol. 14—Characters of a New Genus and Descriptions of two New Species of *Cossonidae* from the Sandwich Islands, pp. 4, 5. Characters of a New Genus and Descriptions of New Species of *Geodephaga* from the Sandwich Islands, pp. 142-148.

Vol. 15—Characters of New Genera and Descriptions of New Species of *Geodephaga* from the Hawaiian Islands: Part 1, pp. 119-123; Part 2, pp. 156-158; Part 3, pp. 104-109 (Vol. 16); Part 4, pp. 226-229 (Vol. 17); Part 5, pp. 62-64 (Vol. 18).

Vol. 17—Notes on Species of *Aculeate Hymenoptera* Occurring in the Hawaiian Islands (Blackburn and Kirby), pp. 85-89. Descriptions of Four New Species of *Cossonidae* from the Hawaiian Islands, pp. 199-201.

Vol. 19—Descriptions of the Larvæ of Hawaiian Lepidoptera, pp. 55, 56.

Vol. 21—Notes on Some Hawaiian *Carabidae*, pp. 25, 26. *In the Scottish Naturalist:—*

Outline Descriptions of British Coleoptera (Reprinted in pamphlet form, 1875, pp. 1-71).

*In Annales de la Société Entomologique de Belgique:—*

Some Observations on the Genus *Oodemas* of the Family *Cossonidae*, 1878, pp. 73, 74.

*In Annals and Magazine of Natural History:—*

Notes on Hawaiian Neuroptera, with Descriptions of New Species, 1884, pp. 412-421.

*In The Scientific Transactions of the Royal Dublin Society:—*

Memoirs on the Coleoptera of the Hawaiian Islands (Blackburn and Sharp), 1885, pp. 119-300, plates iv. and v.

*In Memoirs of the Manchester Literary and Philosophical Society:—*

The Hymenoptera of the Hawaiian Islands (Blackburn and Cameron), 1885-86, pp. 194-295.



*In Transactions of the Royal Society of South Australia:—*

Notes on Australian Coleoptera with Descriptions of New Species: No. 1—1887, pp. 12-30; No. 2—1887, pp. 36-51.

Further Notes on Australian Coleoptera, with Descriptions of New Species: No. 3—1887, pp. 52-71; No. 4—1887, pp. 177-287; No. 5<sup>(2)</sup>—1888, pp. 176-214; No. 6—1889, No. vi., pp. 134-148.

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species:—No. 7—1890, Part vii., pp. 82-93; No. 8—1890, Part viii., pp. 121-160; No. 9—1891, Part ix., pp. 65-153; No. 10—1891, Part x., pp. 292-345; No. 11—1892, Part xi., pp. 20-73; No. 12—1892, Part xii., pp. 207-261; No. 13—1893, Part xiii., pp. 130-140; No. 14—1893, Part xiv., pp. 294-315; No. 15—1894, Part xv., pp. 139-168; No. 16—1894, Part xvi., pp. 200-240; No. 17—1895, Part xvii., pp. 27-60; No. 18—1895, Part xviii., pp. 201-258; No. 19—1896, Part xix., pp. 35-109; No. 20—1896, Part xx., pp. 233-259; No. 21—1897, Part xxi., pp. 28-39; No. 22—1897, Part xxii., pp. 88-98; No. 23—1898, Part xxiii., pp. 18-64; No. 24—1898, Part xxiv., pp. 221-233; No. 25—1899, Part xxv., pp. 22-101; No. 26—1900, Part xxvi., pp. 35-68; No. 27—1900, Part xxvii., pp. 113-169; No. 28—1901, Part xxviii., pp. 15-44; No. 29—1901, Part xxix., pp. 99-131; No. 30—1902, Part xxx., pp. 16-30; No. 31—1902, Part xxxi., pp. 288-321; No. 32—1903, Part xxxii., pp. 91-182; No. 33—1903, Part xxxiii., pp. 261-309; No. 34—1904, Part xxxiv., pp. 281-297; No. 35—1905, Part xxxv., pp. 270-332; No. 36—1906, Part xxxvi., pp. 263-324; No. 37—1907, Part xxxvii., pp. 231-299; No. 38—1908, Part xxxviii., pp. 362-386; No. 39—1909, Part xxxix., pp. 18-64; No. 40—1910, Part xli., pp. 146-230; No. 41—1911, Part xli., pp. 173-203; No. 42<sup>(3)</sup>—1912, Part xlii., pp. 40-75.

Descriptions of Twenty New Species of South Australian Coleoptera:—No. 43—1888, pp. 1-11.

Scientific Results of the Elder Exploring Expedition, Coleoptera:—No. 44—1892, pp. 16-61; No. 45—1892, pp. 177-202.

*In Proceedings of the Linnean Society of New South Wales:—*

Notes on the Hemiptera of the Hawaiian Islands:—1888,<sup>(4)</sup> pp. 343-354.

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(2) The first five parts not numbered originally.

(3) Posthumously.

(4) Not numbered, as no Australian Coleoptera described in same.

Notes on Australian Coleoptera, with Descriptions of New Species:—No. 46, p.p. 805-875.

Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species—No. 47, pp. 1387-1506.

Notes on Australian Coleoptera, with Descriptions of New Species:—No. 48—Part iii.,<sup>(5)</sup> pp. 445-482; No. 49—Part iv., pp. 707-746; No. 50—Part v., pp. 1247-1276; No. 51—Part vi., pp. 147-156; No. 52—Part vii., pp. 303-366; No. 53—Part viii., pp. 553-592; No. 54—Part ix., pp. 775-790; No. 55—Part x., pp. 479-550; No. 56—Part xi., pp. 65-151; No. 57—Part xii., pp. 283-300; No. 58—Part xiii., pp. 185-208; No. 59—Part xiv., pp. 245-286; No. 60—Part xv., pp. 85-108.

Revision of the Genus *Heteronyx*, with Descriptions of New Species:—No. 61—Part i., pp. 1321-1362; No. 62—Part ii., pp. 137-170; No. 63—Part iii., pp. 426-444; No. 64—Part iv., pp. 661-706; No. 65—Part v., pp. 1217-1246.

Revision of the Genera *Colpochila* (including *Haplongycha*), *Sericesthis*, and their Allies, with Descriptions of New Species:—No. 66—Part i.,<sup>(6)</sup> pp. 517-552.

Revision of the Australian Amarygmides:—No. 67—Part i., pp. 411-470; No. 68—Part ii., pp. 53-106.

Revision of the Genus *Paropsis*:—No. 69—Part i., pp. 637-693; No. 70—Part ii., pp. 166-189; No. 71—Part iii., pp. 218-263; No. 72—Part iv., pp. 656-700; No. 73—Part v., pp. 482-521; No. 74—Part vi., pp. 159-196.

Revision of the Australian Species of *Bolboceras*, with Descriptions of New Species:—No. 75, pp. 481-526.

*In Proceedings of the Royal Society of Victoria:—*

On some New Genera and Species of Australian Coleoptera:—No. 76—1899, pp. 206-233.

Revision of the Australian Aphodiides and Descriptions of three New Species Allied to them:—No. 77—1904, pp. 145-181.

*In Report of the Horn Expedition to Central Australia:—*

Coleoptera:—No. 78—1896, pp. 254-308.

*Australasian Association for the Advancement of Science:—*

Importance of Ascertaining Distribution of Australian Fauna:—1893, pp. 446-451.

He described or named a little over 3,000 species of Australian Coleoptera.<sup>(7)</sup>

(5) The first two parts were not numbered.

(6) All published.

(7) 3,069. A total far ahead of that of any other Australian entomologist.

As with many others, he at first did not specially mark his types, but of late years he did mark them, and all of those that were sent to the British Museum, and most of those remaining in his collection, were marked T.

Shortly before his death he sent many of the types to the British Museum, and a list of these was kept. At the time of his death he had two boxes filled with types, and these, after being examined and listed, were also sent to the British Museum.

He also named many species from the collections of the South Australian Museum. At the foot of his descriptions of many of these the types are explicitly stated to be in that institution. In talking the matter over with him only about a month before his death he informed the writer that when he had described specimens from the Museum only he returned the types to that institution, even when there were numerous specimens of a species. Thus the types of the beetles named from the Elder Exploring Expedition, from Mr. Zietz's trip to Lake Callabonna, Mr. J. G. Otto Tepper's from Kangaroo Island and elsewhere, and Mr. J. P. Tepper's from the Northern Territory, etc., should, with few exceptions, all be in the Museum.<sup>(8)</sup>

Co-types of many of his species, however, are scattered largely through his own and other collections, and his labels at the present time are well known to all Australian Coleopterists.

The increasing importance attached to type specimens of insects causes it to be of importance to Australian Coleopterists to know exactly where his types may be seen. I therefore went through all his papers and prepared a list of the species described from Australia. He named many other beetles, bugs, etc., from the Hawaiian Islands, but in the appended list only the Australian beetles are dealt with.

For the purposes of this list it was not considered desirable to give the usual abbreviations of the Transactions or Proceedings of the Societies in which the descriptions appeared, but to give a reference number to each paper containing descriptions of Australian beetles. The following abbreviations are also used:—

Sub. Substitute-name, for preoccupied names. For these names the types, of course, would originally bear different names, and the actual specimens were usually not known to Mr. Blackburn.

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(8) In some instances, however, he retained the actual type specimens and sent them to the British Museum. Where, therefore, the specimens so sent were marked as types, the present writer, in all cases, regards them as such.

- B. Type is in British Museum.
- M. Type is, or should be, in Macleay Museum, Sydney.
- N. Type is, or should be, in National Museum, Melbourne. Most of these were originally in Mr. C. French's collection; some were from the Horn Expedition, and a few were originally from the Museum. Unfortunately, in many instances, Mr. French removed Mr. Blackburn's labels, substituting some in his own writing for the sake of uniformity. He often, however, attached a special "type" label to the specimens.
- S. Type is, or should be, in South Australian Museum.

In a few instances no letter follows the reference, and in such cases the location of the type is unknown to me at present.

Many of the species were first referred to genera from which they were subsequently removed: but in the list the species are all noted as if belonging to the genera to which they were originally referred. In some cases, however, the specimens were sent to the British Museum under their revised names, and these exceptions are noted

For facility of reference the families, genera, and species are arranged in alphabetical sequence.

#### LIST OF SPECIES NAMED BY MR. BLACKBURN.

- |                                   |  |
|-----------------------------------|--|
| Abacetus crenulatus, 49-726 (B)   | Adelotopus oreberrimus, 28-19 (B)      |
| macleayi, 49-727 (Sub)            | micans, 28-18 (B)                      |
| simplex, 49-726 (B)               | tasmani, 28-18 (B)                     |
| Acalonoma pusilla, 59-256 (B)     | Adimonia lugen, 19-96 (B)              |
| Acantholophus franklinensis, 7-92 | mastersi, 19-87 (B)                    |
| (type in coll. J. Anderson)       | richmondensis, 19-87 (B)               |
| niveovittatus, 53-576             | Adoryphorus, 47-1412                   |
| simplex, 78-292 (B)               | Ægosoma carpentariae, 58-191 (N)       |
| tatei, 78-292 (B)                 | Æolus queenslandicus, 57-296 (B)       |
| Acrogenus tinctus, 19-38 (N)      | Æthinodes, 9-109                       |
| Acrogenys australis, 6-132 (B)    | marmoratum, 9-109 (B)                  |
| Acroniopus pallidus, 47-1423 (S)  | Agelastica impura, 47-1499 (B)         |
| Acupalpus morganensis, 53-556 (B) | lineata, 5-175 (B)                     |
| Acylophorus indignus, 43-4 (B)    | Agestra punctulata, 53-584 (B)         |
| Adelaidia, 9-130                  | Agetinus aequalis, 47-1478 (S)         |
| rigua, 9-130 (B)                  | Agonocheila fenestrata, 56-80 (B)      |
| Adelium æquale, 55-539 (B)        | koebelei, 18-201 (B)                   |
| alpicola, 55-536 (B)              | perplexa, 16-201 (B)                   |
| angulatum, 55-538 (B)             | stictica, 18-201 (B)                   |
| ellipticum, 16-219 (B)            | Agrilus frenchi, 10-302 (N)            |
| inconspicuum, 55-536 (B)          | terræ-reginæ, 12-220 (B)               |
| hindense, 55-538 (B)              | Alaus darwini, 50-1259 (B)             |
| occidentale, 53-574 (B)           | Alcides terræ-reginæ, 27-141 (B)       |
| pustulosum, 55-534 (B)            | Alcmæonis punctulaticollis, 13-134 (B) |
| simplex, 44-44 (S)                |  |
| tropicum, 55-537 (B)              |  |
| victoriæ, 55-535 (N)              |  |

- Alecochara insignis*, 2-47 (B)  
*læta*, 2-46 (B)  
*occidentalis*, 2-46 (B)  
*pelagi*, 2-45 (B)  
 Only head and prothorax now remaining.  
*Allelidea viridis*, 10-302 (B)  
*Amarygmus æger*, 68-94 (B)  
*alienus*, 68-93 (B)  
*diaperoides*, 47-1435 (S)  
*frenchi*, 68-97 (B)  
*lilliputanus*, 68-100 (B)  
*lindensis*, 68-104 (B)  
*pectoralis*, 68-96 (B)  
*perplexus*, 68-102 (B)  
*pinguis*, 68-102 (B)  
*porosus*, 68-98 (B)  
*queenslandicus*, 68-101 (B)  
*rimosus*, 68-103 (B)  
*ruficornis*, 68-96 (B)  
*rugaticollis*, 68-104 (B)  
*rutilipes*, 68-100 (B)  
*stolidus*, 68-99 (B)  
*suavis*, 68-95 (B)  
*tardus*, 50-1271 (B)  
*uniformis*, 50-1272, 68-105 (B)  
*Amblytelus brevis*, 56-87 (B)  
*discoidalis*, 54-782 (B)  
*inornatus*, 54-781 (B)  
*sinuatus*, 56-87 (B)  
*Amphichroum adelaidæ*, 11-23 (B)  
*Amphimela australis*, 47-1491 (B)  
*piceicornis*, 19-42 (B)  
*Amphiops australicus*, 24-226 (B)  
*duplopunctulatus*, 24-226 (B)  
*Amphirhoe sloanei*, 48-453 (B)  
*Anacanthopus*, 23-42  
*inermis*, 23-43 (B)  
*Anacheirotus*, 26-39  
*inornatus*, 26-40 (B)  
*Ananca boisduvalii* (see *Silis* (australis)  
*zietzi*, 17-55 (S)  
*Anaplopus*, 52-311  
*tuberculatus*, 52-313 (B)  
*Anarciarthrum*, 52-354  
*viride*, 52-355 (B)  
*Anatisis frenchi*, 54-789 (N)  
*muelleri*, 22-59 (N)  
*Anaxo æreus*, 10-308 (B)  
*affinis*, 10-309 (B)  
*ater*, 10-310 (B)  
*lindensis*, 10-309 (B)  
*obscurus*, 10-309 (B)  
*occidentalis*, 10-311 (B)  
*puncticeps*, 10-311 (N)  
*sparsus*, 10-310 (N)  
*sydneyanus*, 13-134  
*Anoita didyma*, 28-35 (B)  
*dispar*, 28-34 (B)  
*Anepius*, 30-29  
*koebelæi*, 30-30 (B)  
*raucus*, 30-30 (B)  
*Aneucornides*, 23-34  
*coloratus*, 23-35 (B)  
*hirticollis*, 42-44 (B)  
*Aneurystypus*, 4-230  
*aurilegulus*, 20-257 (B)  
*calvus*, 4-231 (B)  
*collaris*, 57-286 (B)  
*dives*, 20-258 (B)  
*pauillus*, 39-81 (B)  
*richardsæ*, 51-149 (B)  
*Anilara angusta*, 10-296 (N)  
*læta*, 10-297 (B)  
*planifrons*, 4-248 (B)  
*soror*, 10-296 (N)  
*subcostata*, 10-296 (S)  
*Anodontonyx antennalis*, 37-266 (B)  
*chalceus*, 37-263 (B)  
*consanguineus*, 37-262 (B)  
*creber*, 37-262 (B)  
*gravicollis*, 37-260 (B)  
*hirticeps*, 37-266 (B)  
*indignus*, 37-264 (B)  
*rectangulus*, 37-264 (B)  
*tetricus*, 37-261 (B)  
*Anomala australasie*, 56-113 (B)  
*Anoplognathus brevicollis*, 55-493 (B)  
*concinus*, 26-41 (B)  
*macleayi*, 55-495 (B)  
*Anorthorrhinus*, 52-327  
*pictipes*, 52-328 (B)  
*Anthicidæ*, 10-336, 16-219  
*Anthrenus flindersi*, 9-132 (B)  
*ocellifer*, 9-132 (B)  
*Anthribidæ*, 27-141, 28-31  
*Antitrogus burmeisteri*, 41-200 (B)  
*nigricornis*, 41-199 (B)  
*Antoligostethus*, 41-203  
*lucidus*, 41-203 (B)  
*Antyllis alternata*, 52-345 (B)  
*bella*, 53-587 (B)  
*Aoplonemius loweri*, 58-188 (B)  
*tasmanicus*, 14-301 (B)  
*Aparete nodosa*, 45-179 (S)  
*Apate lindi*, 50-1263 (B)  
*Apatodes*, 47-1429  
*macleayi*, 47-1429 (S)  
*Apellatus apicalis*, 47-1440 (B)  
*nigricornis*, 10-315 (B)  
*nodicornis*, 10-314 (B)  
*Aphanasium variegatum*, 45-196 (S)  
*Aphileus ferox*, 17-56 (B)  
*Aphodius andersoni*, 77-154 (B)  
*baldiensis*, 77-156 (B)  
*callabonnensis*, 17-32 (S)  
*frenchi*, 11-35 (B)  
*insignior*, 77-156 (B)  
*lindensis*, 11-35 (B)  
*suberosus*, 77-155 (B)  
*victoriae*, 22-88 (B)  
*yorkensis*, 12-209 (B)  
*Aphthona cowleyi*, 19-76 (B)  
*Apion terræ-reginæ*, 56-151 (B)  
*Aposites gracilis*, 58-198 (N)  
*lanaticollis*, 11-61 (B)  
*niger*, 11-62 (B)  
*Aprorsictus intricatus*, 47-1464 (S)  
*Aræocerodes*, 27-167  
*lilliputanus*, 27-167 (B)

- Aræocerus asperulus*, 27-166 (B)  
*bicristatus*, 27-163 (B)  
*koebelei*, 27-164 (B)  
*lindensis*, 27-165 (B)
- Arsipoda æneofulva*, 19-47 (B)  
*ænescens*, 19-52 (B)  
*collaris*, 19-54 (B)  
*concolor*, 19-46 (B)  
*consanguinea*, 19-48 (B)  
*deceptrix*, 19-50 (B)  
*detersa*, 19-49 (B)  
*fossipennis*, 19-53 (B)  
*hepatica*, 19-54 (B)  
*jocosa*, 19-47 (B)  
*jugularis*, 19-53 (B)  
*kingensis*, 37-298 (B)  
*læviceps*, 19-46 (B)  
*languida*, 19-46 (B)  
*laticollis*, 19-56 (B)  
*pallidicornis*, 19-50 (B)  
*paradoxa*, 19-51 (B)  
*picturata*, 19-55 (B)  
*podontoides*, 19-52 (B)  
*spectabilis*, 19-48 (B)  
*striatipennis*, 19-49 (B)  
*terminalis*, 19-51 (B)  
*variabilis*, 19-55 (B)
- Arthropterus foveipennis*, 11-24  
*occidentalis*, 11-25
- Articerus asper*, 6-138 (B)
- Asemantus*, 20-248  
*leai*, 21-29 (B)
- Aspidomorpha lauta*, 19-108 (B)  
*planipennis*, 19-107 (B)
- Aspidophorus humeralis*, 60-92 (B)
- Astræus major*, 50-1257 (B)  
*meyricki*, 50-1256 (B)  
*simplex*, 12-211 (N)  
*tepperi*, 50-1259 (B)
- Atænius coloratus*, 77-169 (B)  
*consors*, 77-168 (B)  
*deserti*, 60-95 (B)  
*gibbus*, 77-166 (B)  
*goyderensis*, 78-264 (B)  
*imparilis*, 77-163 (B)  
*koebelei*, 77-162 (B)  
*macilentus*, 77-167 (B)  
*mendax*, 11-36 (B)
- Sent as *Saprosites mendax*.  
*monilistatus*, 77-161 (B)  
*nudus*, 77-166 (B)  
*palmerstoni*, 9-135 (B)  
*sparsicollis*, 77-164 (B)  
*speculator*, 9-135 (B)  
*spissus*, 77-167 (B)  
*torridus*, 11-36 (B)  
*tweedensis*, 77-165 (B)  
*walkeri*, 77-170 (B)  
*zietzi*, 17-32 (S)
- Ateratocerus*, 52-357  
*intricatus*, 52-357 (B)
- Atermonocheila*, 37-238  
*longipes*, 37-239 (B)
- Aterpus abruptus*, 56-132 (B)  
*raucus*, 56-132 (B)
- Atesta eremita*, 45-194 (S)  
*tatei*, 4-284 (B)
- Athemistus cristatus*, 58-200 (B)  
*monticola*, 58-201 (B)  
*torridus*, 58-202 (N)
- Atomaria australis*, 9-119 (B)  
*eucalypti*, 11-33 (B)  
*lindensis*, 9-119 (B)
- Atractocerus victoriensis*, 10-306 (N)
- Atychoria rudis*, 78-294 (B)
- Augomela acervata*, 47-1488 (B)
- Aulacocyclus collaris*, 20-233 (B)  
*errans*, 20-233 (B)
- Aulacophora australis*, 47-1498 (B)  
*cucullata*, 19-83 (B)  
*denticornis*, 19-83 (B)  
*palmerstoni*, 47-1497 (B)  
*richmondensis*, 52-360 (B)
- Aulicus amabilis*, 27-133 (B)  
*cribratus*, 27-134 (B)  
*croesus*, 27-127 (B)  
*dives*, 27-128 (B)  
*eremita*, 27-133 (B)  
*modestus*, 27-135 (B)  
*mundus*, 27-131 (B)  
*nigrohirtus*, 27-129 (B)  
*parvulus*, 13-131 (B)  
*robustus*, 27-131 (B)
- Automolus funereus*, 36-283 (B)  
*irrasus*, 36-285 (B)  
*major*, 36-286 (B)  
*opaculus*, 36-285 (B)  
*pictus*, 36-284 (B)  
*semitifer*, 36-283 (B)
- Axynaon*, 21-34  
*championi*, 21-35
- In the British Museum list no species of *Axynaon* was mentioned; but there was a *Chalcopterus championi*. But Blackburn did not name a *Chalcopterus championi*, so probably the name *Chalcopterus* was used in error for *Axynaon*
- Bagous adelaidæ*, 59-285 (B)  
*australasiæ*, 59-284 (B)  
*clarenciensis*, 15-163 (B)
- Baris orchivora*, 26-61 (B)
- Barronica*, 18-202  
*scorpio*, 18-203 (B)
- Barycistela*, 10-327  
*robusta*, 10-328 (B)
- Basitropis pallida*, 27-156 (B)  
*relicta*, 27-154 (B)
- Bebius variegatus*, 11-64 (B)
- Belus abdominalis*, 45-187 (B)  
*adelaidæ*, 45-189 (B)  
*bison*, 45-184 (B)  
*difficilis*, 45-181 (S)  
*distinctus*, 45-190 (B)  
*elegans*, 45-187 (B)  
*flindersi*, 45-185 (B)  
*frater*, 45-182 (S)  
*helmsi*, 45-182 (S)  
*insipidus*, 47-1455 (S)  
*mundus*, 45-186 (B)  
*perplexus*, 45-184 (B)

- Belus regalis*, 45-188 (B)  
*tibialis*, 45-190 (B)  
*ventralis*, 45-182 (S)
- Bembidium dubium*, 2-43 (B)  
*errans*, 2-43 (B)  
*hobarti*, 29-123 (B)  
*ocellatum*, 2-44 (B)  
*proprium*, 2-43 (B)  
*secalioides*, 54-786 (B)  
*victoriense*, 54-785 (B)  
*wattsense*, 29-123 (B)
- Berosus auriceps*, 48-447 (B)  
*debilipennis*, 24-224 (B)  
*decipiens*, 46-827 (B)  
*discolor*, 46-829 (B)  
*duplopunctatus*, 46-828 (B)  
*findersi*, 46-831 (B)  
*gravis*, 46-826 (B)  
*macumbensis*, 78-259 (B)  
*majusculus*, 46-824 (B)  
*munitipennis*, 17-30 (B)  
*queenslandicus*, 24-225 (B)  
*simulans*, 46-832 (S)
- Bethelium mundum*, 11-57 (B)  
*spiniornis*, 25-91 (B)  
*tricolor*, 11-56 (B)
- Bledius adalaidae*, 2-49 (B)  
*caroli*, 1-14 (B)  
*cowleyi*, 30-22 (B)  
*infans*, 9-76 (B)  
*injuvundus*, 1-14 (B)  
*insignicornis*, 9-75 (B)  
*minax*, 1-14 (B)  
*ovensensis*, 9-76 (B)  
*pontilis*, 30-22 (B)
- Blepegenes nitidus*, 55-533 (N)
- Bolboceras aratum*, 75-502 (B)  
*basedowi*, 75-512 (S)  
*bovilli*, 75-503 (B)  
*carinatum*, 75-523 (B male, S female)  
*chelyum*, 47-1395 (B)  
*clypeale*, 75-511 (B)  
*fenestratum*, 46-845 (B)  
*fraternum*, 75-517 (B)  
*froggatti*, 75-509 (B)  
*impressicollis*, 75-520 (B)  
*laevipes*, 75-517 (B)  
*loweri*, 75-515 (B)  
*macleayi*, 75-500 (B)  
*mandibulare*, 75-513 (B)  
*nitens*, 75-519 (B)  
*nitidiceps*, 75-516 (B)  
*obscurus*, 75-522 (B)  
*pontiferum*, 75-525 (S)  
*richardae*, 8-159 (B)  
*simpliciceps*, 46-844 (B)  
*sloanei*, 47-1393 (B)  
*subretusum*, 75-518 (B)  
*tatei*, 46-842 (S)  
*tenax*, 75-507 (B)  
*terre-reginae*, 25-25 (B)  
*truncatum*, 75-509 (B)
- Bostrychidae*, 13-131, 22-92, 44-38, 47-1429, 50-1261, 78-273
- Bothrideres costatus*, 4-197 (B)  
*tibialis*, 4-196 (B)  
*variabilis*, 4-196 (B)  
*victoriensis*, 9-117
- There was no specimen bearing this label in Mr Blackburn's boxes of types. But in his general collection there is a label, "*Bothrideres victoriensis*, *Blackb*", with a card on which are parts of two legs, these apparently being all that is left of the type
- Brachypeplus barronensis*, 31-305 (B)  
*cowleyi*, 31-304 (B)  
*kemlensis*, 31-306 (B)  
*koebelei*, 31-304 (B)  
*olliffi*, 31-302 (B)  
*wattsensis*, 31-303 (B)
- Brachysphyrus*, 32-160  
*irroratus*, 32-160 (B)
- Brenthidae*, 19-36
- Bruchidae*, 26-62
- Bruchus lyndhurstensis*, 26-62 (B)  
*oodnadattae*, 26-63 (B)  
*persimulans*, 26-64 (B)  
*quornensis*, 26-63 (B)
- Bryaxis harti*, 9-78 (B)  
*inuitata*, 9-79 (B)  
*lindensis*, 9-77 (B)  
*ovensensis*, 9-80 (B)  
*paludis*, 9-81
- Bubastes inconstans*, 47-1414 (B)  
*laticollis*, 47-1415 (B)  
*occidentalis*, 10-293 (N)  
*splendens*, 10-294 (N)  
*vagans*, 12-313 (B)
- Bubastodes*, 12-212  
*sulciollis*, 12-212 (B)
- Bucolellus*, 5-210  
*ornatus*, 5-210 (B)
- Bucolinus*, 12-252  
*longicornis*, 12-252 (B)
- Bucolus convexus*, 11-72 (B)  
*frater*, 18-255 (B)  
*posticalis*, 18-256 (B)
- Bupala bovilli*, 31-317 (B)  
*dentata*, 31-318 (B)
- Buprestidae*, 4, 234, 8-146, 9-136, 10-293, 11-41, 12-211, 13-130, 14-295, 15-140, 16-207, 19-35, 21-30, 25-28, 26-41, 28-22, 29-130, 32-181, 33-306, 42-72, 44-35, 46-860, 47-1414, 50-1256, 51-152, 52-307, 54-788, 55-496, 57-287, 60-98, 78-268
- Byrrhidae*, 6-138, 9-133, 32-173, 60-92
- Byrrhomorpha*, 56-109  
*anomala*, 37-275 (B)  
*ponderosa*, 56-111 (B)  
*verres*, 56-110 (B)
- Byrrhus raucus*, 9-133 (B)  
*Sent as Pedilophorus raucus*.  
*torrensensis*, 6-138 (B)
- Cacephatus*, 27-151  
*ericeus*, 27-151 (B)
- Cacochroa obscura*, 46-858 (B)

- Cædiomorpha*, 4-272  
     *australis*, 4-272 (B)  
*Cædius lindi*, 4-271 (B)  
*Cafius occidentalis*, 2-48 (B)  
*Cairnsia*, 18-224  
     *cowleyi*, 18-225 (B)  
*Callabonica*, 17-36  
     *propria*, 17-36 (S)  
*Callirhipis cardwellensis*, 20-258 (N)  
*Calloodes frenchi*, 51-148 (B)  
     Sent as *Anoplognathus frenchi*  
*Calochromus cucullatus*, 26-56 (B)  
     *simillimus*, 26-57 (B)  
     *rostratus*, 26-58  
*Calomela apicalis*, 47-1489 (S)  
     *distinguenda*, 47-1490 (S)  
     *eyrei*, 51-155 (B)  
     *flavescens*, 52-358 (B)  
     *imperialis*, 45-201 (S)  
     *lauta*, 78-302 (B)  
     *satelles*, 45-200 (B)  
     *tassalis*, 47-1490 (B)  
*Candozea bovilli*, 5-179 (B)  
     *leai*, 16-287 (B)  
     *palmerstoni*, 5-178 (B)  
     *sculpta*, 52-363 (B)  
*Cantharidæ*, 6-141, 12-228, 25-59, 44-46  
*Canthydrus bovilli*, 48-446 (B)  
*Car*, 21-35  
     *condensatus*, 21-36 (B)  
*Carabidæ*, 1-12, 2-36, 3-52, 4-177,  
     6-132, 7-82, 9-65, 11-20, 14-294,  
     15-139, 16-200, 17-27, 18-201,  
     26-35, 28-16, 29-99, 32-91,  
     33-261, 38-362, 43-1, 44-17,  
     46-805, 47-1387, 48-445, 49-707,  
     50-1247, 52-304, 53-553, 54-775,  
     55-479, 56-65, 60-85  
*Cardiophorus eucalypti*, 55-516  
     *victoriensis*, 55-516  
*Cardiothorax aeripennis*, 12-226 (B)  
*Carenum cupreomarginatum*, 3-63 (B)  
     *fugitivum*, 3-61 (B)  
     *inconspicuum*, 3-59 (B)  
     *macleayi*, 3-64 (B)  
     *rugatum*, 3-62 (B)  
*Cassida adelaidæ*, 19-106 (B)  
     *prothoracica*, 19-107 (B)  
*Catasarcus armatus*, 59-271 (B)  
     *farinosus*, 78-288 (B)  
     *sericeus*, 59-270 (B)  
*Cathartus cairnsensis*, 32-151 (B)  
*Catocalphe*, 18-220  
     *minans*, 18-221 (S)  
*Catypnes planicollis*, 17-58 (B)  
*Caulobius advena*, 23-51 (B)  
     *compactus*, 23-53 (B)  
     *discedens*, 23-52 (B)  
     *evanescens*, 23-54 (B)  
     Sent as *Automolus evanescens*  
         *imitis*, 36-289 (B)  
         *punctulatus*, 23-51 (B)  
         *rotundus*, 36-290 (B male, S  
             female)  
*Cavonus parvus*, 4-224 (B)  
     *sculpturatus*, 4-223 (B)  
     *sharpi*, 4-223 (B)  
*Centyres delens*, 25-89 (B)  
     *sinuatus*, 56-129 (B)  
*Cephalodesmus minor*, 26-36 (B)  
*Cerambycidæ*, 4-284, 8-127, 10-342,  
     11-56, 11-69, 12-233, 15-165,  
     17-57, 18-222, 19-37, 20-259,  
     21-37, 22-97, 25-90, 28-31, 31-319,  
     36-323, 37-296, 38-386, 45-194,  
     47-1456, 48-450, 49-742, 50-1273,  
     51-154, 54-789, 55-543, 58-191,  
     59-286, 60-106, 76-227, 78-299  
*Ceratognathus frenchi*, 21-28 (B)  
     *froggatti*, 60-94 (B)  
     *gilesi*, 18-215 (B)  
*Cercyon fossus*, 46-840 (B)  
     *kingense*, 37-231 (B)  
*Cerylon alienigenum*, 32-133 (B)  
*Cestrinus angustior*, 16-211 (B)  
     *aspersus*, 16-210 (B)  
     *championi*, 16-210 (B)  
     *eremicola*, 16-211 (B)  
     *minor*, 16-212 (B)  
     *zietzi*, 16-212 (S)  
*Chaetocnema* (see *Flectroscelus*)  
*Chalcolampra adelaidæ*, 48-479 (B)  
     *distinguenda*, 48-482 (S)  
     *eremita*, 45-200 (S)  
     *hursti*, 48-480 (B)  
     *rustica*, 8-138  
*Chalcomela sloanei*, 52-356 (B)  
*Chalcoophora beltana*, 60-100 (B)  
     *exilis*, 60-98 (B)  
     *frenchi*, 9-136 (N)  
     *pedifera*, 52-307 (N)  
*Chalcopterus acutangulis*, 25-47 (B)  
     *arthuri*, 31-319 (B)  
     *bellus*, 67-433 (B)  
     *boops*, 25-45 (B)  
     *bovilli*, 67-453 (B)  
     *brevipennis*, 67-434

In the British Museum list a species was marked as being sent without the name. As *brevipennis* is the only species whose type cannot be accounted for, the specimen sent was probably *brevipennis*. Mr Blackburn's number for it was 4442.

- cairnsi*, 68-72 (B)  
*carinaticeps*, 67-468 (B)  
*carus*, 67-430 (B)  
*catenulatus*, 67-469 (B)  
*clypealis*, 67-420 (B)  
*colossus*, 67-454 (B)  
*confluens*, 67-440 (B)  
*costatus*, 25-46 (B)  
*crassus*, 25-44 (B)  
*cribratus*, 28-25 (B)  
*cylindricus*, 67-452 (B)  
*difficilis*, 67-426 (B)  
*eremita*, 44-44 (B)  
*exoletus*, 68-70 (B)  
*eyrensis*, 67-442 (B)  
*froggatti*, 67-456 (B)  
*gracilicornis*, 25-45 (B)



- Chalcopterus gracilior*, 68-81 (B)  
*hunterensis*, 68-77 (B)  
*imperialis*, 67-455 (B)  
*inconspicuus*, 67-466 (B)  
*interioris*, 52-311 (N)  
*intermedius*, 67-439 (B)  
*iridiventris*, 67-458 (B)  
*iris*, 25-43 (B)  
*jucundus*, 25-50 (B)  
*juvenis*, 67-429 (B)  
*koichi*, 26-59 (B)  
*laetus*, 67-428 (B)  
*laticollis*, 68-81 (B)  
*leai*, 68-79 (B)  
*lepidus*, 67-465 (B)  
*longiusculus*, 47-1435 (S)  
*longulus*, 67-455 (B)  
*macer*, 67-464 (B)  
*major*, 67-449 (B)  
*mastersi*, 68-73 (B)  
*mercurius*, 67-449 (B)  
*meyricki*, 44-45 (B)  
*micans*, 67-441 (B)  
*mimus*, 67-450 (B)  
*minor*, 67-448 (B)  
*modestus*, 67-432 (B)  
*mundus*, 25-48 (B)  
*murrayensis*, 67-462 (B)  
*neglectus*, 67-446 (B)  
*nobilis*, 68-76 (B)  
*oblongus*, 67-464 (B)  
*obscurus*, 67-445 (B)  
*ocularis*, 68-79 (B)  
*palmerensis*, 68-80 (B)  
*palmerstoni*, 67-443 (B)  
*perlongus*, 67-444 (B)  
*placidus*, 67-435 (B)  
*plutus*, 67-461 (B)  
*proditor*, 25-44 (B)  
*prospiciens*, 68-74 (B)  
*proximus*, 68-71 (B)  
*puer*, 25-41 (B)  
*pulcher*, 68-78 (B)  
*punctulatus*, 67-463 (B)  
*rusticus*, 68-76 (B)  
*segnis*, 68-85 (B)  
*semiseriatus*, 67-460 (B)  
*setosus*, 67-459 (B)  
*similis*, 67-451 (B)  
*simius*, 67-421 (B)  
*sparsus*, 67-431 (B)  
*superbus*, 52-309 (B)  
*tinotus*, 67-425 (B)  
*versicolor*, 67-424 (B)  
*vigilans*, 67-433 (B)  
*vividus*, 67-438 (B)  
*yorkensis*, 67-467 (B)  
*zonatus*, 25-46 (B)
- Chalcotania angulipennis*, 78-269 (B)  
 Sent as *Chalcophora angulipennis*.  
*sulciventris*, 78-270 (B)  
 Sent as *Chalcophora sulciventris*.  
*Chariotheca besti*, 60-105 (B)  
*Chartopteryx victoriensis*, 12-226 (B)  
*Cheiloxena frenchae*, 13-138 (N)  
*insignis*, 19-39 (B)
- Cheiragra macleayi*, 55-482 (B)  
 Sent as *Phyllotocidium macleayi*.  
*Chiroplatys accedens*, 20-245 (B)  
*bifossus*, 20-243 (B)  
*compactus*, 20-246 (B)  
*inermis*, 76-212 (B)  
*pygmaeus*, 20-247 (B)  
*Cheirrhaphica*, 23-25  
*interstitialis*, 23-26 (B)  
*pubescens*, 23-25 (B)  
*Cherrus inconspicuus*, 44-53 (S)  
*longulus*, 44-54 (S)  
*maurulus*, 44-54 (S)  
*ocularis*, 14-298 (B)  
*ruficornis*, 14-299 (B)  
*Chilocorus baileyi*, 50-1275 (B)  
*flavidus*, 12-259 (B)  
*Chirida lacunata*, 19-105 (B)  
*maxima*, 19-104 (B)  
*multicolor*, 19-103 (B)  
*simplicaria*, 19-106 (B)  
*Chlamydopsis comata*, 29-129 (B)  
*inaequalis*, 9-94 (B)  
*sternalis*, 9-93 (B)  
*pygidialis*, 76-206 (B)  
*Choleva adelaidae*, 9-87 (B)  
*antipodum*, 9-87 (B)  
*macleayi*, 32-94 (B)  
*minuscule*, 9-88 (B)  
*victoriensis*, 9-88 (B)  
*Cholevomorpha*, 9-89  
*atropos*, 32-96 (B)  
*extranea*, 32-96 (B)  
*koebelae*, 32-95 (B)  
*picta*, 9-90 (B)  
*Chromomea maculicornis*, 10-315 (N)  
*rufipennis*, 10-316 (B)  
*Chrosis angusticollis*, 27-114 (B)  
*Chrysobothris interioris*, 17-46 (S)  
*Chrysomela australica*, 45-199 (S)  
*Chrysomelidae*, 4-287, 5-175, 8-133,  
 9-139, 10-345, 11-67, 12-235,  
 13-138, 16-220, 19-39, 20-259,  
 24-232, 25-93, 26-65, 27-167,  
 29-131, 33-309, 37-296, 47-1470,  
 48-457, 50-1273, 51-155, 52-356,  
 55-544, 58-205, 60-107, 78-302  
*Cicindela jungi*, 28-15 (B)  
*Cicindelidae*, 28-15, 44-16  
*Cioidea*, 4-265, 8-127, 10-308, 37-285  
*Cis adelaidae*, 4-268 (B)  
*aequalis*, 4-268 (B)  
*australis*, 4-267 (B)  
*leanus*, 37-285 (B)  
*munitus*, 4-268 (B)  
*setiferus*, 4-269 (B)  
*victoriensis*, 10-3 (B)  
*Cisseis bella*, 10-298 (N)  
*constricta*, 4-254 (B)  
*dispar*, 10-297 (B)  
*elongatula*, 46-862 (S)  
*lindi*, 4-254 (B)  
*obscura*, 4-252 (B)  
*occidentalis*, 4-255 (B)  
*parva*, 4-253 (B)

- Cisnois perplexa*, 10-300 (B)  
*pygmæa*, 10-299 (N)  
*verna*, 10-299 (B)  
*Cistela australica*, 47-1441 (S)  
*Cisteliidæ*, 10-308, 13-133, 17-53,  
 47-1436, 56-115, 78-280  
*Clambus simsoni*, 31-288 (B)  
*tasmani*, 31-288 (B)  
*tierensis*, 31-289 (B)  
*tropicus*, 32-97 (B)  
*Cleptor haroldi*, 27-168 (B)  
*Cleridæ*, 8-122, 10-302, 12-222, 13-131,  
 22-91, 25-28, 27-116, 28-25,  
 33-307, 36-322, 44-38, 47-1427,  
 78-273  
*Clivina adelaidæ*, 49-720 (B)  
*æqualis*, 49-718 (B)  
*boops*, 49-719 (B)  
*bovillæ*, 49-717 (B)  
*debilis*, 49-722 (B)  
*dorsalis*, 49-719 (B)  
*eremicola*, 60-87 (B)  
*eyrensis*, 26-35 (B)  
*helmsi*, 44-22 (S)  
*oodnadattæ*, 60-86 (B)  
*tuberculifrons*, 49-721 (B)  
*wildi*, 49-721 (B)  
*Coccinellidæ*, 5-183, 6-148, 9-153, 10-345,  
 11-69, 12-238, 13-140, 16-238,  
 18-237, 19-108, 26-68, 47-1505,  
 50-1275, 78-308  
*Cœlophora guttata*, 12-239 (B)  
*mastersi*, 12-238 (B)  
*nigrovittata*, 18-237 (B)  
*"veranioides*, 16-239 (B)  
*Colaspis palmerstoni*, 47-1477 (S)  
*Colon melbournense*, 11-25 (B)  
*Colpochila bella*, 66-525 (B)  
*bicolor*, 66-528 (B)  
*campestris*, 56-103 (B)  
*carinata*, 66-523 (B)  
*deceptor*, 66-529 (B)  
*dubia*, 66-524 (B)  
*fortis*, 66-522 (B)  
*fraterna*, 66-536 (B)  
*funerea*, 66-531 (B)  
*gibbosicollis*, 66-538 (B)  
*gracilis*, 66-537 (B)  
*laminata*, 66-523 (B)  
*palpalis*, 17-35 (S)  
*pulchella*, 66-530 (B)  
*punctiventris*, 66-526 (B)  
*pygmæa*, 66-533 (B)  
*setosa*, 66-538 (B)  
*sinuaticollis*, 66-531 (B)  
*solida*, 66-527 (B)  
*Colpochilodes*, 23-44  
*raucipennis*, 23-44 (B)  
*Colydiidæ*, 4-191, 8-121, 9-113, 11-29,  
 31-313, 32-118  
*Conurus instabilis*, 43-3 (B)  
*Coolgardica*, 25-93  
*tenebrioides*, 25-94 (B)  
*Copidita baldiensis*, 25-73 (B)  
*dentipes*, 25-77 (B)  
*hilaris*, 25-76 (B)  
*kershawi*, 25-74 (B)  
*languida*, 25-75 (S)  
*pulchra*, 25-76 (B)  
*sloanei*, 25-74 (B)  
*Coptocercus fraternus*, 4-235 (B)  
*nigritulus*, 47-1463 (S)  
*Coptodactyla baileyi*, 50-1251 (B)  
*ducalis*, 32-263 (B)  
*Coræbus pilosicollis*, 10-301 (N)  
*Cormodes constricta* (see *Natalis*)  
*Corrhenes pauxilla*, 28-43 (B)  
*Corticaria adelaidæ*, 9-120 (B)  
*alutacea*, 9-121 (B)  
*andersoni*, 9-121 (B)  
*australis*, 9-120 (B)  
*lindensis*, 9-120 (B)  
*Corynophyllus andersoni*, 4-227 (B)  
*metallicola*, 57-286 (B)  
*modestus*, 4-228 (B)  
*Cotulades montanus*, 13-132 (B)  
*Cranterophorus*, 18-232  
*Crepidodera crassior*, 19-67 (B)  
*indica*, 19-67 (B)  
*Crioceris recensa*, 48-460 (B)  
*Crobenia*, 10-305  
*eyrensis*, 10-305 (B)  
*Cryptamorphia delicatula*, 4-200 (B)  
*lindi*, 4-198 (B)  
*macleayi*, 11-31 (B)  
*olliffi*, 4-199 (B)  
*peregrina*, 32-153 (B)  
*victoriae*, 4-199 (B)  
*Cryptarcha elegantior*, 32-116 (B)  
*obscurior*, 31-310 (B)  
*subnigella*, 32-117 (B)  
*Cryptobium adelaidæ*, 3-69 (B)  
*delicatulum*, 3-69, 43-9 (B)  
*elegans*, 3-70 (B)  
*varicorne*, 3-68 (B)  
*Cryptodus debilis*, 52-307 (B)  
*Cryptolæmus simplex*, 47-1506  
 In the list of species sent to the  
 British Museum a species was noted as  
 'Cryptolæmus, and as but one species was  
 named by Mr Blackburn it apparently  
 must be the type.  
*Cryptophagidæ*, 4-201, 9-119, 11-32,  
 18-216, 32-156, 37-232  
*Cryptophagus australis*, 4-201 (B)  
*gibbipennis*, 11-32 (B)  
*lindensis*, 9-119 (B)  
*nigroapicalis*, 32-156 (B)  
*tasmanicus*, 37-232  
 The type of this species was not marked  
 as such, but a card on which were four  
 specimens of the species, one of which  
 was almost certainly the type, was sent  
 to the British Museum  
*Cryptorrhopalus australicum*, 9-130  
 (B)  
*casuarinæ*, 32-169 (B)  
*ociliense*, 32-170 (B)  
*eucalypti*, 32-171 (B)

- Cryptorrhopalum interioris*, 9-131 (B)  
     *nealense*, 32-170 (B)  
     *quadrifasciatum*, 32-171 (B)  
     *quornense*, 60-93 (B)  
     *terzonatum*, 32-171 (B)  
     *woodvillense*, 9-130 (B)  
*Ctenistes adalaidae*, 6-136 (B)  
     *andersoni*, 9-77 (B)  
     *tenebricosus*, 6-137 (B)  
*Cubicoorrhynchus dilaticeps*, 78-293 (B)  
     *mussoni*, 56-124 (B)  
     *taurus*, 18-220 (S)  
     *tortipes*, 22-96 (B)  
*Cucujidae*, 4-198, 8-121, 9-118, 11-30, 22-88, 32-133, 182, 37-232, 46-840, 78-264  
*Cudnellia*, 48-461  
     *mystica*, 48-462 (B)  
*Curculionidae*, 7-92, 11-56, 12-229, 14-297, 15-143, 16-220, 17-56, 18-220, 21-35, 22-96, 25-87, 26-61, 27-141, 28-26, 36-323, 44-47, 45-178, 47-1442, 50-1273, 52-313, 53-574, 56-115, 58-188, 59-252, 76-226, 78-282  
*Curis discoidalis*, 12-214 (N)  
*Cybister granulatus*, 46-812 (B)  
*Cycloneda barronensis*, 18-238  
*Cyclonotum australe*, 46-839 (B)  
     *cowleyi*, 24-229 (B)  
*Cycloseymnus*, 12-251  
     *concolor*, 18-254 (B)  
     *minutus*, 12-251 (B)  
*Cyclothorax cinctipennis*, 47-1391 (B)  
     *eyrensis*, 55-480 (B)  
     *fortis*, 47-1390 (B)  
     *obsoletus*, 47-1389 (B)  
     *perypoides*, 47-1392 (B)  
*Cydmaea crassirostris*, 58-190 (B)  
     In error in the British Museum list as *crassicornis*  
         *diversa*, 52-340 (B)  
         *fumosa*, 78-297 (B)  
         *invalida*, 52-340 (B)  
         *lineata*, 53-584 (S)  
         *major*, 58-189 (B)  
         *mixta*, 15-158 (B)  
         *obscura*, 52-339 (B)  
*Cyrema*, 5-213  
     *nigellum*, 5-213 (B)  
*Cyria tridens*, 11-41 (B)  
*Cyttalia sydneyensis*, 15-161 (B)  
     *tarsalis*, 15-160 (B)  
*Dædrosia monticola*, 12-227 (B)  
     *victoriae*, 55-533 (B)  
*Dascillidae*, 21-33, 55-517, 57-298, 58-185, 78-272  
*Dasygnathus inermis*, 47-1409 (S)  
     *major*, 47-1406 (B)  
     *recticornis*, 47-1408 (B)  
     *trituberculatus*, 47-1404 (B)  
*Dasytes helmsi*, 44-38 (S)  
     *squiresensis*, 44-38 (S)  
*Demetrias tweedensis*, 56-67 (B)  
*Demonassa capitalis*, 38-386 (B)  
*Deretaphrus aequaliceps*, 32-127 (B)  
     *cordicollis*, 32-125 (B)  
     *cribriceps*, 32-128 (B)  
     *gracilis*, 32-124 (B)  
     *iridescens*, 32-124 (B)  
     *popularis*, 32-126 (B)  
     *sparsiceps*, 32-127 (B)  
     *thoracicus*, 32-122 (B)  
*Dermestidae*, 9-123, 11-34, 12-207, 32-159, 37-232, 44-25, 60-93, 78-264  
*Desiantha assimilis*, 52-324 (B)  
     *maculata*, 52-323 (B)  
     *major*, 52-321 (B)  
     *nigra*, 52-321 (B)  
     *obscura*, 52-325 (B)  
     *parva*, 52-326 (B)  
     *pusilla*, 14-305 (B)  
     *sericea*, 52-322 (B)  
     *vittata*, 14-304 (B)  
*Diabaticus collaris*, 29-111 (B)  
     *minor*, 6-135 (B)  
     *pauper*, 29-111 (B)  
     *tumidiceps*, 6-134 (B)  
*Diadoxus jungi*, 25-28 (B)  
*Dialeptopus approximatus*, 56-124 (B)  
     *lindensis*, 53-580 (B)  
     *lugubris*, 53-578 (B)  
     *obsoletus*, 53-579 (B)  
     *validus*, 53-577 (B)  
*Diaphanops meyricki*, 48-458 (B)  
     *parallelus*, 48-459 (B)  
*Diaphonia euclensis*, 59-248 (B)  
     *lateralis*, 59-246 (S)  
     *satelles*, 59-250 (B)  
*Diaphoromerus victoriensis*, 54-777 (B)  
*Dibolia tepperi*, 47-1495 (S)  
*Dicax deserti*, 78-262 (B)  
     *spenceri*, 78-263 (N)  
*Dicomada rufa*, 53-586 (B)  
*Dicrochile ventralis*, 9-65 (B)  
*Didymocantha nigra*, 8-130  
     *novica*, 12-233 (N)  
*Dilochrosis frenchi*, 59-245 (N)  
*Dineutes inflatus*, 17-28 (B)  
*Diphucephala carteri*, 36-275 (B)  
     *crebra*, 36-275 (B)  
     *elegans*, 55-481 (B)  
     *kershawi*, 22-89 (B)  
     *puberula*, 36-272 (B)  
     *pulcherrima*, 36-273 (B)  
     *rectipennis*, 36-273 (B)  
     *sordida*, 36-274 (B)  
     *spretta*, 56-99 (N)  
*Diphyllus ornatellus*, 32-156 (B)  
*Diplocoelus angustulus*, 9-122 (B)  
     *exiguus*, 9-123 (B)  
     *leai*, 16-204 (B)  
*Discaptothorax*, 76-219  
     *koebeleii*, 76-220 (B)  
*Discoderes torridus*, 10-301 (N)  
*Distichocera frenchi*, 58-200 (N)  
*Ditoma hilaris*, 4-194 (B)  
     *lineatocollis*, 4-195 (B)

- Ditoma nivicola*, 9-114 (B)  
*obscura*, 4-193 (B)  
*parva*, 4-193 (B)  
*perforata*, 4-193 (B)  
*pulchra*, 4-191 (B)  
*torrida*, 9-114 (B)  
*Ditropidus palmerstoni*, 47-1472 (S)  
*Docalis maculatus*, 13-132 (B)  
*Dohrnia eremita*, 25-78 (B)  
*Domene torrensensis*, 9-75 (B)  
*Donacia australasiae*, 12-235 (B)  
*Doticus aequalipennis*, 27-162 (B)  
*Dromius yarrae*, 56-71 (B)  
*Dromæolus interioris*, 55-502 (B)  
*Dryophilodes*, 10-307  
*australis*, 10-307 (B)  
*insignis*, 10-307 (B)  
*Dyscerasphorus*, 18-236  
*laticeps*, 18-237 (B)  
*Dyschaenium*, 52-346  
*flavum*, 52-346 (B)  
*Dyscharachthis*, 76-217  
*brevipennis*, 76-219 (B)  
*Dyschirius ovensensis*, 54-775 (B)  
*torrensensis*, 7-82 (B)  
*Dyscolocerus concolor*, 76-225 (B)  
*heros*, 11-56 (B)  
*victoriensis*, 76-226 (B)  
*Dyscostes advena*, 56-128 (B)  
*crawfordi*, 52-314 (B)  
*glaber*, 56-127 (B)  
*pilosus*, 52-317 (B)  
*punctiventris*, 52-319 (B)  
*ventralis*, 52-315 (B)  
*Dysphanochila*, 23-48  
*pilosipennis*, 23-48 (B)  
*Dysstrichothorax*, 56-88  
*bicolor*, 56-88 (B)  
*bipunctatus*, 56-89 (B)  
*lividus*, 56-90 (B)  
*sloanei*, 56-89 (B)  
*vicinus*, 56-90  
*Dysstrigonisthis*, 76-221  
*paradoxus*, 76-222 (B)  
*Dytiscidae*, 3-65, 29-124, 32-92, 44-24,  
46-812, 47-1393, 48-446, 78-254  
*Echthrogaster*, 76-213  
*lugubris*, 76-215 (B)  
*Ecrizothis*, 25-87  
*inaequalis*, 25-88 (B)  
*Ectosticta ornata*, 11-66 (B)  
Type headless and otherwise much  
broken.  
*Ectroma*, 49-710  
*elegans*, 29-107 (B)  
*fragile*, 29-110 (B)  
*grave*, 29-108 (B)  
*obsoletum*, 56-72 (B)  
*parvicolle*, 16-201 (B)  
*Edusa aenea*, 9-146 (B)  
*angustula*, 26-66 (B)  
*bella*, 9-148 (B)  
*distincta*, 9-146 (B)  
*diversicollis*, 9-144 (B)  
*fraterna*, 9-150 (B)  
*froggatti*, 9-145 (B)  
*Edusa glabra*, 9-152 (B)  
*glauca*, 9-149 (B)  
*hirta*, 9-150 (B)  
*inermis*, 9-151 (S)  
<sup>10</sup> *laeta*, 9-143 (B)  
*lineata*, 9-147 (B)  
*meyricki*, 9-151 (B)  
*minor*, 9-146 (B)  
*pavens*, 9-151 (B)  
*perplexa*, 9-147 (B)  
*pilifera*, 9-149 (B)  
*singularis*, 9-152 (B)  
*spiniicollis*, 9-145 (B)  
*varians*, 9-144 (B)  
*Edusoides*, 48-477  
*pulchra*, 48-477  
*Egeetria sulcicollis*, 76-281 (B)  
*Elasmocerus picticollis*, 28-25 (B)  
*Elatér wentworthensis*, 57-297  
*Elatéridae*, 6-139, 7-89, 14-296, 19-35,  
21-32, 26-49, 27-114, 41-201,  
42-74, 44-37, 47-1416, 50-1259,  
52-309, 53-561, 55-503, 57-288,  
76-213, 78-271  
*Eleothreptus*, 18-235  
*punctulatus*, 18-236 (B)  
*Eleusis parva*, 11-24 (B)  
*Elleschodes*, 21-37  
*hamiltoni*, 21-37 (B)  
*Ellopiæ sloanei*, 5-178 (B)  
*Elmis tasmanicus*, 60-94 (B)  
*Emenadia capito*, 25-57 (B)  
*championi*, 25-56 (B)  
*difficilis*, 25-56 (B)  
*diversiceps*, 25-55 (B)  
*interioris*, 25-58 (B)  
*punctuliceps*, 25-57 (B)  
*Emplæsis ænigmaticus*, 78-297 (B)  
*albosignata*, 52-336 (B)  
*assimilis*, 52-335 (B)  
*gravis*, 52-333  
*interioris*, 15-159 (B)  
*majuscula*, 14-302 (B)  
*monticola*, 56-142 (B)  
*munda*, 52-334 (B)  
*notata*, 52-332  
*ocellata*, 56-143  
*umbrosa*, 52-336 (B)  
*Empolis*, 52-342  
*angustatus*, 52-343  
*leai*, 14-311  
*longipes*, 14-310  
*Enamillus mauricei*, 37-235 (S)  
*sharpi*, 35-279 (B)  
Sent as *Sarothromerus sharpi*  
*Encosmia*, 14-307  
*adelaidæ*, 14-307 (B)  
*cornuta*, 15-158  
*infusata*, 14-308  
*Endomychidae*, 18-232, 52-366  
*Engyops*, 23-43  
*spectans*, 23-44 (B)  
*Eniopea posticalis*, 14-309  
*sydneyensis*, 14-310  
*tenebricosa*, 14-309

- Enneaphyllus rossi*, 8-127 (B)  
*Enspodus*, 27-148  
     *bigobbosus*, 27-149 (B)  
*Entomophthalmus uniformis*, 76-224 (B)  
*Entromus*, 27-145  
     *dorsoplagiatus*, 27-146 (B)  
*Epacticus*, 14-305  
     *nigrirostris*, 14-306 (B)  
     *ruber*, 14-306 (B)  
*Epamæbus*, 14-312  
     *scutellaris*, 14-312 (B)  
*Epargemus*, 27-146  
     *marmoratus*, 27-147 (B)  
*Epelyx*, 56-92  
     *latus*, 56-92 (B)  
     *lindensis*, 56-92 (B)  
*Ephidionius parvicollis*, 17-52 (S)  
*Epholcis longior*, 23-29 (B)  
*Epilachna terræ-reginæ*, 18-237 (B)  
*Epilectus*, 4-177  
*Episcaphula brevicornis*, 18-227 (B)  
     *duplopunctata*, 47-1504 (S)  
     *foveicollis*, 18-227 (B)  
     *guttatipennis*, 47-1504 (S)  
     *nigrofasciata*, 18-226 (B)  
*Eristus*, 56-148  
     *bicolor*, 56-150 (B)  
     *setosus*, 56-150 (B)  
*Erithionyx*, 12-259  
*Erotylidae*, 13-140, 18-226, 47-1503  
*Esmelina australis*, 56-123 (B)  
*Essolithna seriata*, 44-50 (B)  
*Ethadomorpha*, 28-29  
     *clauda*, 28-30 (B)  
*Ethas*, 15-156  
     *eruditus*, 15-157 (B)  
     *varians*, 15-156 (B)  
*Ethon maculatus*, 4-250 (N)  
*Eucalyptocola marcida*, 32-91 (B)  
*Eucnemidae*, 11-55, 18-219, 26-49, 29-131, 55-502, 76-215  
*Eucorynus mastersi*, 27-144 (B)  
*Euctenia occidentalis*, 25-51 (S)  
*Euops victoriensis*, 59-235 (B)  
*Eupalea rotunda*, 5-188 (B)  
*Euparia olliffi*, 77-171 (B)  
*Eupines militaris*, 9-85 (B)  
     *nauta*, 9-83 (B)  
     *nautoides*, 9-84 (B)  
     *relicta*, 10-292 (B)  
     *scorocula*, 9-82 (B)  
     *spiniventris*, 9-84 (B)  
*Eurhynchus splendidus*, 15-163 (B)  
*Eurispa fraterna*, 11-68 (B)  
     *major*, 47-1503 (S)  
     *nigripes*, 11-67 (B)  
     *simplex*, 11-68 (B)  
*Eurybia australis*, 4-247 (B)  
*Eurygnathus*, 1-12  
     *fortis*, 1-13 (S)  
*Euryscaphus chaudoiri*, 56-82 (B)  
     *subsulcatus*, 43-2 (B)  
     *sulcoicollis*, 56-81 (B)  
     *tatei*, 43-1 (B)  
*Euthypsis funerea*, 28-26 (B)  
     *parva*, 59-255 (B)  
*Eutoma adalaidæ*, 3-52 (S)  
*Evadodes*, 78-282  
     *decorum*, 78-283 (B)  
*Evadomorpha*, 78-284  
     *everardensis*, 78-284 (N)  
*Evanocera meyricki*, 25-52  
     *minuta*, 45-178 (S)  
     *persimilis*, 26-60 (B)  
     *perthensis*, 25-53 (B)  
*Evas everardensis*, 44-47 (S)  
*Exangelus*, 22-93  
     *angustus*, 22-94 (B)  
     *gracilior*, 33-308 (B)  
*Fornax coloratus*, 18-219 (N)  
*Frenchella*, 56-104  
     *approximans*, 23-40 (B male, S female)  
     *aspericollis*, 23-41 (B)  
     *calorata*, 37-269 (B)  
     *hirticollis*, 23-40 (B male, S female)  
     *hispidula*, 23-39 (B male, S female)  
     *lubrica*, 56-104 (B)  
     *sparsiceps*, 23-41 (B)  
*Germanica*, 4-257  
     *casuarinæ*, 4-257 (B)  
*Gerynassa affinis*, 56-144 (B)  
     *andersoni*, 14-313 (B)  
     *minor*, 56-145 (B)  
     *picicornis*, 14-313 (B)  
     *simplex*, 14-313 (B)  
*Gigadema dux*, 29-100 (B)  
     *eremita*, 44-17 (S)  
     *longicollis*, 29-101 (B)  
     *longius*, 29-101 (B)  
     *mandibulare*, 44-18 (S)  
     *rugaticollis*, 28-16 (B)  
*Glaucopela distincta*, 15-155 (B)  
     *fusco-marmorea*, 15-155 (B)  
     *varipes*, 53-592 (B)  
*Glossocheilifer*, 23-36  
     *addendus*, 37-241 (B)  
     *labialis*, 23-37 (B)  
*Glycyphana subdepressa*, 51-151 (S)  
*Glypheus alpinus*, 57-290 (B)  
*Glyphochilus montanus*, 57-290 (B)  
*Glyptoma sculptum*, 30-26 (B)  
     *sordidum*, 30-26 (B)  
*Gnathaphanus aridus*, 44-22 (S)  
     *darwinii*, 46-808 (B)  
*Gœtymes pictipes*, 25-69 (B)  
*Goniapterus rufus*, 56-130 (B)  
*Gymnoscynus*, 12-241  
     *explanatus*, 18-240 (B)  
     *quadrimaculatus*, 12-242 (B)  
*Gyrinidae*, 17-28, 29-126, 32-92, 78-254  
*Haltica australis*, 47-1493 (S)  
     *ferruginis*, 47-1494 (S)  
     *gravida*, 19-75 (B)  
     *igneæ*, 47-1494 (S)  
     *pagana*, 19-74 (B)

- Halticodes*, 19-69  
     *disparipes*, 19-70 (B)  
*Haplaner insulicola*, 29-114 (B)  
*Haplonycha accepta*, 36-309 (B)  
     *æqualiceps*, 36-319 (B)  
     *amabilis*, 36-312 (B)  
     *amœna*, 36-313 (B)  
     *antennalis*, 36-304 (B)  
     *arvicola*, 36-317 (B)  
     *clara*, 36-320 (B)  
     *clypealis*, 36-311 (B)  
     *egregria*, 36-316 (B)  
     *electa*, 36-318 (B)  
     *faceta*, 36-321 (B)  
     *firma*, 36-311 (B)  
     *griffithi*, 37-239 (B)  
     *jungi*, 36-322 (B)  
     *latebricola*, 36-306 (B)  
     *longior*, 36-308 (B)  
     *lucifera*, 36-314 (type in coll.  
         Lea)  
     *marginata*, 36-307 (B)  
     *mauricioi*, 36-315 (S)  
     *neglecta*, 36-304 (S)  
     *nobilis*, 36-313 (S)  
     *paradoxa*, 36-310 (B)  
     *pilosa*, 36-305 (B)  
     *punctatissima*, 36-309 (B)  
     *rustica*, 36-316 (B)  
     *sabulicola*, 36-319 (B)  
     *sloanei*, 36-308 (B)  
     *spadix*, 36-307 (B)  
     *thoracica*, 36-320 (B)  
     *trichopyga*, 36-306 (B)  
*Haplonyx ornatipennis*, 15-164 (B)  
*Haplopus debilis*, 23-50 (B)  
     *olliffi*, 23-50 (B)  
     *viridis*, 56-109 (B)  
*Haptoncurs brightensis*, 32-113 (B)  
     *darwiniensis*, 32-115 (B)  
     *eyrensis*, 32-115 (B)  
     *lindensis*, 9-103 (B)  
     *meyricki*, 9-104 (B)  
     *nelsonensis*, 32-114 (B)  
     *sloanei*, 32-113 (B)  
     *sparsior*, 32-114 (B)  
     *uniformis*, 9-104 (B)  
     *victoriensis*, 9-113 (B)  
*Hebesecis fasciculatus*, 45-197 (B)  
*Helæus aridus*, 44-41 (S)  
     *brevicostatus*, 46-865 (B)  
     *debilis*, 44-42 (S)  
     <sup>11</sup> *elongatus*, 50-1267 (B)  
     *horridus*, 46-866 (S)  
     *ingens*, 44-43 (B)  
     *lubricus*, 44-42 (S)  
     *modicus*, 25-39 (B)  
     *scaphiformis*, 25-38 (B)  
     *subseriatus*, 25-40 (B)  
*Helodes adelaidæ*, 55-521 (B)  
     *angulatus*, 58-186 (B)  
     *cinctus*, 55-518 (B)  
*Helodes fenestratus*, 57-306 (B)  
     *frater*, 55-520 (B)  
     *lindensis*, 55-522 (B)  
     *montivagans*, 55-519 (B)  
     *olliffi*, 55-518 (B)  
     *ovensensis*, 55-520 (B)  
     *pictus*, 55-520 (B)  
     *princeps*, 55-517 (B)  
     *spilotus*, 55-521 (B)  
*Hemicistela*, 10-331  
     *discoidalis*, 10-332 (B)  
*Hesperus pulleinei*, 43-7  
*Heteroceridæ*, 4-205, 9-133, 32-177,  
     78-264  
*Heterocerus debilipes*, 32-179 (B)  
     *findersi*, 4-205 (B)  
     *indistinctus*, 9-134 (B)  
     *largensis*, 32-177 (B)  
     *multimaculatus*, 4-205 (B)  
     *victoriæ*, 9-133 (B)  
*Heteroderes cairnsensis*, 14-296 (B)  
     *carinatus*, 47-1423 (B)  
*Heteromastix anticus*, 12-221 (B)  
     *dilataticollis*, 12-222 (B)  
*Heteronyx acutifrons*, 63-442 (B)  
     *additus*, 39-77 (B)  
     *advena*, 65-1221 (S)  
     *æqualiceps*, 65-1236 (B)  
     *æqualis*, 61-1345 (B)  
     *affinis*, 39-65 (B)  
     *agricola*, 40-162 (B)  
     *alienus*, 44-29 (S)  
     *alpicola*, 55-487 (B)  
     *ambiguus*, 40-207 (B)  
     *amœnus*, 40-207 (B)  
     *anceps*, 62-163 (B)  
     *angustus*, 64-699 (B)  
     *anomalus*, 38-381 (B)  
     *apertus*, 40-157 (B)  
     *approximans*, 40-209 (B)  
     *arcanus*, 56-106 (B)  
     *aridus*, 63-432 (B)  
     *aspericollis*, 63-431 (M)  
     *asperifrons*, 39-36 (B)  
     *augustæ*, 62-162 (B)  
     *auricomus*, 62-158 (M)  
     *austrinus*, 40-165 (B)  
     *baldiensis*, 55-485 (B)  
     Sent as *Pseudoheteronyx baldi*ensis.  
     *beltanæ*, 61-1343 (B)  
     *bidentatus*, 63-434 (B)  
     *blandus*, 39-78 (B)  
     *borealis*, 63-439 (B)  
     *bovilli*, 65-1220 (B)  
     *breviceps*, 61-1344 (B)  
     *brevicollis*, 61-1338 (M)  
     *brevicornis*, 62-148 (B)  
     *calidus*, 40-215 (B)  
     *callabonnæ*, 39-33 (S)  
     *campestris*, 40-166 (B)  
     *capitalis*, 40-225 (B)  
     *carteri*, 39-72 (B)  
     *cliens*, 40-184 (B)  
     *coatei*, 39-42 (B)  
     *collaris*, 64-701 (B)

<sup>11</sup> Type sent to British Museum, although stated to be in Mr. J. Anderson's collection.

*Heteronyx comans*, 39-73 (B)  
*comes*, 40-157 (B)  
*confertus*, 40-219 (B)  
*conjunctus*, 40-204 (B)  
*consanguineus*, 55-490 (B)  
*constans*, 62-154 (B)  
*convexicollis*, 40-214 (B)  
*copiosus*, 39-67 (B)  
*cornutus*, 40-224 (B)  
*costulatus*, 40-222 (B)  
*cowelli*, 60-96 (B)  
*coxalis*, 40-221 (B)  
*crassus*, 62-161 (B)  
*cribriceps*, 44-32 (S)  
*cribripennis*, 42-45 (B)  
*crinitus*, 40-161 (B)  
*cunnamullæ*, 40-162 (B)  
*cygneus*, 62-159 (B)  
*darlingensis*, 61-1349 (M)  
*darwini*, 63-435 (B)  
*debilicollis*, 39-60 (B)  
*debilis*, 62-169 (B)  
*deceptor*, 65-1227 (B)  
*declaratus*, 39-25 (B)  
*decorus*, 44-31 (S)  
*dentipes*, 62-168 (B)  
*difficilis*, 42-47 (B)  
*disjectus*, 40-179 (B)  
*dispar*, 38-379 (B)  
*diversiceps*, 65-1234 (B)  
*doctus*, 64-692 (B)  
*doddi*, 38-381 (B)  
*dubius*, 62-157 (S)  
*dux*, 39-30 (B)  
*electus*, 62-160 (B)  
*elongatus*, 39-62 (B)

Name altered to *elongatulus*

*elytrurus*, 39-67 (B)  
*eremita*, 39-63 (B)  
*erichsoni*, 40-203 (Sub)  
*excisus*, 65-1239 (B)  
*exectus*, 39-74 (B)  
*fallax*, 64-672  
*farineusis*, 40-205 (B)  
*fervidus*, 44-30 (S)  
*fiotus*, 40-181 (B)  
*firmus*, 39-31 (B)  
*fissiceps*, 65-1238 (B)  
*flavus*, 64-696 (B)  
*fortis*, 61-1334 (B)  
*fraserensis*, 44-31 (S)  
*fraternus*, 64-673 (B)  
*frenchi*, 39-32 (B)  
*frontalis*, 61-1336 (S)  
*fulvohirtus*, 61-1337 (B)  
*furvus*, 44-34 (S)  
*gracilipes*, 61-1347 (B)  
*grandis*, 27-113 (B)  
*granulatus*, 40-163 (B)  
*granulifer*, 62-146 (S)  
*griffithi*, 39-26 (B)  
*hackeri*, 40-205 (B)  
*helmsi*, 44-33 (S)  
*hirsutus*, 40-213 (B)  
*hirtuosus*, 64-671 (B)

*Heteronyx hispidulus*, 38-335 (B)  
*horridus*, 61-1342 (B)  
*hothamensis*, 39-59 (B)  
*humilis*, 40-183 (B)  
*ignobilis*, 40-174 (B)  
*imitator*, 39-34 (B)  
*impar*, 40-213 (B)  
*incognitus*, 55-487 (B)  
*incola*, 63-436 (B)  
*incomptus*, 39-29 (B)  
*inconspicuus*, 40-216 (B)  
*incultus*, 63-430 (B)  
*infirmus*, 40-175 (B)  
*ingratus*, 39-58 (B)  
*insignis*, 61-1332 (B)  
*interioris*, 39-69 (B)  
*intermedius*, 39-75 (B)  
*intrusus*, 40-158 (B)  
*iridiventris*, 64-704 (B)  
*jejunos*, 62-166 (B)  
*johannis*, 42-46 (B)  
*jubatus*, 64-669 (B)  
*labralis*, 38-382 (B)  
*læviceps*, 61-1354 (B)  
*laminatus*, 64-690 (B)  
*lateritius*, 62-165 (B)  
*leai*, 39-33 (B)  
*lilliputianus*, 65-1222 (B)  
*lindi*, 61-1362 (B)  
*litigiosus*, 38-378 (B)  
*lividus*, 63-437 (B)  
*lobatus*, 61-1353 (B)  
*longulus*, 64-698 (B)  
*lubricus*, 64-680 (B)  
*lucidus*, 40-180 (B)  
*luteolus*, 39-36 (B)  
*macilentus*, 40-202 (B)  
*macleayi*, 40-203 (B)  
*maculatus*, 61-1361 (B)  
*mæstus*, 40-206 (B)  
*major*, 40-199 (B)  
*marcidus*, 57-285 (B)  
*marginatus*, 64-703 (M)  
*maurulus*, 40-164 (B)  
*merus*, 56-106 (B)  
*metropolitanus*, 39-58 (B)  
*mildurensis*, 40-218 (B)  
*mimus*, 64-696 (B)  
*minutus*, 40-210 (B)  
*miser*, 40-211 (B)  
*modestus*, 40-178 (B)  
*montanus*, 64-681 (B)  
*monticola*, 39-75 (B)  
*mulwalensis*, 62-150 (B)  
*mundus*, 39-56 (B)  
*nasutus*, 62-147 (B)  
*neglectus*, 40-177 (B)  
*nigrescens*, 39-64 (B)  
*nigrinus*, 64-677 (B)  
*nitidus*, 53-559 (B)  
*normalis*, 62-145 (B)  
*novitius*, 40-220 (B)  
*nubilus*, 39-66 (B)  
*nudus*, 40-212 (B)  
*occidentalis*, 61-1350 (M)

- Heteronyx olliffi*, 40-203 (B)  
*oodnadattæ*, 39 24 (B)  
*orbis*, 39-68 (B)  
*ordinarius*, 40-210 (B)  
*oscillator*, 64 678 (B)  
*pauper*, 40-182 (B)  
*pauxillus*, 40-176 (B)  
*pedarius*, 40-226 (B)  
*peregrinus*, 64 693 (B)  
*perkinsi*, 39-55 (B)  
*piger*, 62-153 (B)  
*pinguis*, 65 1242
- No specimen found bearing this name
- placidus*, 40-147 (B)  
*planiceps*, 40-208 (B)  
*ponderosus*, 39-39 (B)  
*posticalis*, 64-700 (B)  
*potens*, 63-428 (B)  
*proditor*, 55-492 (B)  
*proprius*, 40-160 (B)  
*prosper*, 39-78 (B)  
*protervus*, 56-107 (B)  
*puncticollis*, 64-684 (B)  
*punctipennis*, 62-149 (B)  
*punctipes*, 39-62 (B)  
*puer*, 40 217 (B)  
*pustulosus*, 64-685 (B)  
*pygidialis*, 61-1356 (B)  
*pygmæus*, 40-159 (B)  
*quadraticollis*, 65-1237 (B)  
*quæritus*, 39-54 (B)  
*queenslandicus*, 39-37 (B)  
*randalli*, 65 1226 (B)  
*rapax*, 64-679  
*raucinasus*, 62-152 (B)  
*rectangulus*, 40-179 (B)  
*relictus*, 39-79 (B)  
*rhinastus*, 64-688 (B)  
*rhinoceros*, 57-284 (B)  
*rothi*, 64 683 (B)  
*rotundifrons*, 63-443 (B)  
*rudis*, 38-378 (B)  
*rusticus*, 64-676 (B)  
*salebrosus*, 39-71 (B)  
*satelles*, 61-1348 (B)  
*scalptus*, 64-689 (B)  
*sequens*, 60 97 (B)  
*seriatus*, 39-72 (B)  
*setifer*, 65-1233 (B)  
*severus*, 44-29 (S)  
*sexualis*, 39-41 (B)  
*siccus*, 44-33 (S)  
*simius*, 64-675 (M)  
*simplicicollis*, 39 65 (B)  
*simulator*, 61-1355 (B)  
*sloanei*, 62-164 (B)  
*socius*, 39-57 (B)  
*solidus*, 61-1342 (M)  
*sollicitus*, 40-173 (B)  
*sordidus*, 40-182 (B)  
*sparsus*, 63-440 (B)  
*spissus*, 39-40 (B)  
*spretus*, 61-1340 (B)  
*squalidus*, 38-380 (S)  
*striatus*, 39-70 (B)
- Heteronyx suavis*, 39-27 (B)  
*subcylindricus*, 40-217 (B)  
*subfortis*, 38 385 (B)  
*submetallicus*, 61-136<sup>o</sup> (B)  
*sulcifrons*, 39-70 (B)  
*suturalis*, 17-37 (B)  
*sydneyanus*, 53-559 (B)  
*tæniensis*, 39-61 (B)  
*tarsalis*, 39-26 (B)  
*tasmanicus*, 39 54 (B)  
*tenebrosus*, 39-29 (B)  
*tepperi*, 61-1339 (S)  
*terrena*, 55-486 (B)  
*testaceus*, 61-1350 (B)  
*thoracicus*, 39-76 (B)  
*torvus*, 61-1335 (B)  
*tridens*, 55 489 (B)  
*tristis*, 61-1333 (B)  
*tropicus*, 39-28 (B)  
*umbrinus*, 39-30 (B)  
*unicus*, 26-38 (B)  
*vacuus*, 64-674 (B)  
*vagans*, 64-694 (B)  
*validus*, 40-160 (B)  
*variegatus*, 61-1351 (B)  
*viator*, 65-1228 (B)  
*vicinus*, 40-158 (B)  
*victoris*, 61-1346 (S)  
*viduus*, 40-176 (B)  
*waterhousei*, 40-201 (B)  
*xanthotrichus*, 40 200 (B)  
*yilgarnensis*, 53-557 (B)  
*zalotus*, 40-148 (B)
- Heterothops taurus*, 43-4  
*Histeridæ*, 9-92, 11-26, 29-129, 32-101,  
44-24, 76-206, 78-263
- Holophylla australis*, 4-212 (B)  
*Homalium adalaidæ*, 4-191 (B)  
*morrisi*, 30-28 (B)  
*tasmanicum*, 30-27 (B)
- Homethes angulatus*, 56-68 (B)  
*gracilis*, 56 69 (B)  
*parvicollis*, 56-69 (B)  
*rotundatus*, 56-70 (B)
- Homœomota lætabilis*, 76-232 (B)  
*Homœolacon*, 7-90  
*gracilis*, 7-91 (B)
- Homotrysis arida*, 17-53 (B)  
*callabonnensis*, 17-53 (S)  
*fusca*, 10-326 (B)  
*limbata*, 10-323 (B)  
*lugubris*, 10 322 (B)  
*nitida*, 10-326 (B)  
*princeps*, 10-325 (B)  
*rufa*, 10-324 (B)  
*ruficornis*, 10-322 (B)  
*sitiens*, 17-53 (B)  
*tenebrioides*, 10-325 (B)
- Hopatomorpha*, 37 289
- Hopatrum adalaidæ*, 16-214 (B)  
*carpentariæ*, 16-213 (B)  
*oowardense*, 16-215 (B)  
*darlingense*, 16 216 (B)  
*darwini*, 16-217 (B)  
*elderi*, 44-39 (S)



- Hopatrum longicorne*, 44-39 (S)  
     *macleayi*, 37-288 (B)  
     *meyricki*, 16-213 (B)  
     *misellum*, 37-288 (B)  
     *victoriae*, 16-218 (B)  
*Hoplostines*, 52-361  
     *viridipennis*, 52-361 (B)  
*Hoplozonitis*, 12-228  
     *mira*, 12-229 (B)  
*Hormocerus fossulatus*, 19-36 (B)  
*Hyborrhynchus aurigena*, 25-89 (B)  
*Hydræna evanescens*, 24-229 (B)  
     Sent as *Ochthebius evanescens*  
         *rudallensis*, 78-261 (N)  
         *simplicicollis*, 78-261 (N)  
         *torrensensis*, 46-836 (B)  
     Sent as *Ochthebius torrensensis*  
*Hydrobaticus australis*, 46-823 (B)  
     *clypeatus*, 52-305 (B)  
     *tatei*, 78-258 (N)  
*Hydrobiomorpha*, 46-814  
     *bovilli*, 46-816 (B)  
     *helenæ*, 49-741 (B)  
     *tepperi*, 46-817 (B)  
*Hydrobius macer*, 46-818 (B)  
*Hydrocanthus waterhousei*, 3-65 (S)  
*Hydrochus adalaidæ*, 46-832 (B)  
     *diversiceps*, 24-228 (B)  
     *horni*, 78-259 (N)  
     *interioris*, 78-260 (B)  
     *læte-viridis*, 78-260 (N)  
     *palmerstoni*, 17-29 (B)  
     *regularis*, 46-833 (B)  
     *victoriæ*, 46-834 (B)  
*Hydrophilus scissipalpus*, 29-128 (B)  
*Hydrophyllidæ*, 9-66, 12-207, 16-203,  
     17-29, 24-221, 29-128, 32-93,  
     37-231, 44-24, 46-812, 48-447,  
     49-741, 52-305, 57-283, 60-91,  
     78-254  
*Hygrotrichus de visii*, 24-225 (B)  
*Hyocis nigra*, 60-101 (B)  
     *occidentalis*, 60-102 (B)  
     *variegata*, 60-102 (B)  
*Hypattalus*, 16-208  
     *elegans*, 16-209 (B)  
     *punctulatus*, 16-209 (B)  
*Hypaulax interioris*, 47-1431 (B)  
     *iridescens*, 47-1433 (S)  
*Hyperomma abnorme*, 11-22 (B)  
*Hyphæria beltanensis*, 45-179 (B)  
     *parallela*, 45-180 (B)  
     *variabilis*, 45-181 (B)  
*Hyphaltica*, 19-70  
     *adalaidæ*, 19-73 (B)  
     *anomala*, 19-71 (B)  
     *lauta*, 19-71 (B)  
     *mediocris*, 19-72 (B)  
     *occidentalis*, 19-72 (B)  
*Hypharpax obsoletus*, 56-84 (B)  
     *sloanei*, 9-65 (B)  
     *vilis*, 54-777 (B)  
*Hyphoryctes*, 17-37  
     *maculatus*, 17-38 (B)  
*Hypocaccus piscarius*, 32-108 (B)  
     *vernulus*, 32-108 (B)  
*Hypocilibe heroina*, 78-279 (B)  
     *inconspicua*, 53-572 (B)  
     *læta*, 53-567 (B)  
     *lugubris*, 53-570 (B)  
     *major*, 53-565 (B)  
     *rotundata*, 53-568 (B)  
     *sculpturata*, 53-569 (B)  
     *veternosa*, 27-140 (B)  
     *vittata*, 60-104 (B)  
*Hypocrema*, 12-250  
     *pauillum*, 12-251 (B)  
*Hypostigmodera*, 12-215  
     *variegata*, 12-215 (B)  
*Idæthina cincta*, 9-107 (B)  
*Idiocephala palmerstoni*, 47-1473 (S)  
     *pura*, 47-1473 (S)  
*Idiophyes*, 18-234  
     *brevis*, 18-235 (B)  
*Ilænæ meyricki*, 48-455 (B)  
*Iphiaustus dispar*, 58-204 (N)  
*Ischiopsopha bourkei*, 17-44 (B)  
*Isodon bidens*, 20-239 (B)  
     *intermedius*, 20-241 (B)  
     *lævipennis*, 20-240 (B)  
     *meyricki*, 20-237 (B)  
     *nasutus*, 20-239 (B)  
     *novitius*, 21-28 (B)  
     *terræ-reginæ*, 20-238 (B)  
*Isotira raucipennis*, 12-225 (B)  
*Johannica*, 4-287  
*Laccobius australis*, 9-67 (B)  
     *montanus*, 9-67 (B)  
*Lacon adalaidæ*, 55-505 (B)  
     *andersoni*, 55-508 (B)  
     *brightensis*, 55-503 (B)  
     *duplex*, 55-506 (B)  
     *eucalypti*, 55-507 (B)  
     *farinensis*, 26-49 (B)  
     *lindensis*, 55-504 (B)  
     *mansuetus*, 57-288 (B)  
     *murrayensis*, 55-504  
     *squalescens*, 57-289  
     *yilgarnensis*, 57-289  
     *zietzi*, 17-48 (S)  
*Læmophlæus australasiæ*, 11-30 (B)  
     *diemenensis*, 32-140 (B)  
     *difficilis*, 46-840 (B)  
     *frenchi*, 32-146 (B)  
     *insignior*, 32-143 (B)  
     *lindi*, 46-841 (B)  
     *murrayensis*, 32-141 (B)  
     *pusulæ*, 32-142 (B)  
     *victoriæ*, 32-182 (B male, S  
         female)  
*Lagriæ tincta*, 48-449  
*Lagriidæ*, 10-335, 48-449, 78-280  
*Laius conicicornis*, 4-262 (B)  
     *distortus*, 4-264 (B)  
     *eremita*, 17-51 (B)  
     *eyrensis*, 55-531 (B)  
     *femoralis*, 55-531 (B)  
     *major*, 47-1426 (S)  
     *nodicornis*, 4-263 (B)  
     *pretiosus*, 55-532 (B)  
     *variegatus*, 47-1426 (S)

- Lasiodactylus obscurus*, 9-106 (B)  
*Lathridiidae*, 4-201, 9-120, 78-264  
*Lathridius apicalis*, 4-204 (B)  
*costatipennis*, 4-202 (B)  
*minor*, 4-204 (B)  
*nigromaculatus*, 4-203 (B)  
*punctipennis*, 4-204 (B)  
*satelles*, 4-202 (B)  
*semicostatus*, 4-203 (B)  
*Lathrobium adalaidae*, 43-8 (B)  
*exiguum*, 3-56 (B)  
*victoriense*, 9-71 (B)  
*Lathropus brightensis*, 32-147 (B)  
*Lecanomerus flavocinctus*, 4-188 (B)  
*lindi*, 4-189 (B)  
*major*, 55-479 (B)  
*nitidus*, 54-779 (B)  
*obscurus*, 4-189  
*striatus*, 55-479 (B)  
*Lemidia angustula*, 12-224 (B)  
*leoparda*, 12-224 (B)  
*munda*, 12-223 (B)  
*pictipes*, 12-222 (B)  
*pulchella*, 12-223 (B)  
*simulans*, 12-222 (B)  
*soror*, 12-223 (B)  
*Lepidiota bovilli*, 42-54 (B)  
*caudata*, 7-85, 42-60 (B)  
*darwinii*, 46-850 (B)  
*deceptrix*, 42-59 (B)  
*degener*, 46-853 (S)  
*delicatula*, 46-852 (S)  
*frenchi*, 42-58 (B)  
*gilesi*, 42-62 (B)  
*grata*, 7-86 (B)  
*koebeleii*, 42-54 (B)  
*leai*, 42-57 (B)  
*negatoria*, 42-63 (B)  
*perkinsi*, 42-56 (B)  
*rubrior*, 42-55 (B)  
*rufa*, 46-854 (S)  
*rothei*, 4-213 (B)  
*suavior*, 42-56 (B)  
*townsvillensis*, 42-61 (B)  
*Lepispilus rotundicollis*, 6-140 (S)  
*Leptacinus filum*, 43-7 (B)  
*picticornis*, 43-7 (B)  
 Sent as *Xantholimus picticornis*  
*Leptops areolatus*, 44-58 (S)  
*baileyi*, 47-1444 (B)  
*biordinatus*, 44-55 (S)  
*contrarius*, 44-60 (S)  
*frontalis*, 47-1445 (S)  
*gravis*, 44-57 (B)  
*horni*, 78-287 (B)  
*insignis*, 47-1443 (S)  
*interioris*, 44-59 (B)  
*palmensis*, 78-287 (B)  
*planicollis*, 44-58 (B)  
*raucus*, 44-56 (B)  
*sculptus*, 78-285 (B)  
*sulcicollis*, 44-60 (S)  
*tempeensis*, 78-286 (B)  
*Lestignathus minor*, 49-740 (B)  
*Leucocraspedum elegantulum*, 30-18 (B)  
*Leucocraspedum lugens*, 30-18 (B)  
*validum*, 30-17 (B)  
*Licinoma pallipes*, 55-542 (B)  
*sylvicola*, 16-219 (B)  
*Licymnius bicolor*, 13-133 (B)  
*Lindia*, 4-275  
*angusta*, 4-275 (B)  
*Liparetrus adalaidae*, 56-101 (S)  
*agrestis*, 1-25 (B)  
*alienus*, 35-324 (B)  
<sup>12</sup> *alpicola*, 55-483 (B)  
*amabilis*, 35-321 (B)  
*analis*, 1-23 (S)  
*aridus*, 17-34 (B)  
<sup>12</sup> *aureus*, 1-27 (B)  
<sup>12</sup> *bicolor*, 1-28 (B)  
*blanchardi*, 35-328 (B)  
*brevipes*, 35-328 (B)  
*brunneipennis*, 55-484  
 The type has disappeared, but there are two co-types in the collection of the South Australian Museum. The name is a synonym of *ubiquitosus*  
*caviceps*, 1-19 (B)  
*cinctipennis*, 35-327 (B)  
*confusus*, 42-43 (B)  
*consanguineus*, 35-322 (S)  
*dispar*, 1-25 (S)  
*distans*, 35-318 (B)  
*distinctus*, 17-34 (S)  
*diversus*, 1-21 (B)  
*fallax*, 46-849 (S)  
*fimbriatus*, 1-18 (B male, S female)  
*gracilipes*, 1-20 (B)  
*granulatus*, 1-28  
*gravidus*, 35-326 (B male, S female)  
*incertus*, 35-320 (B)  
*insolitus*, 35-330 (B)  
*insularis*, 1-24 (S)  
*juvenis*, 46-849 (S)  
*laeticulus*, 47-1397 (B)  
*latus*, 1-26 (B)  
*leai*, 35-329 (B)  
*lividipennis*, 35-319 (B)  
*lugens*, 56-100 (B male, S female)  
*macleani*, 1-27 (B)  
*maurus*, 56-99 (B)  
*melanocephalus*, 17-34 (S)  
*minor*, 35-327 (B)  
*modestus*, 1-25 (S)  
*mysticus*, 47-1398 (S)  
*necessarius*, 35-318 (B male, S female)  
*nigroumbratus*, 1-22 (B)  
*palmerstoni*, 46-847 (S)  
*perkinsi*, 35-324 (B)  
*perplexus*, 2-50  
 No specimen in collection marked as the type. But one labelled as *perplexus* placed as *craniger*, *Macf.*  
<sup>12</sup> These species sent under *Automolus*

- Liparetrus posticalis*, 46-848 (B)  
 puer, 35-323 (B)  
 rothi, 1-22  
 rotundicollis, 35-325 (B)  
 rugatus, 35-329 (B)  
 sedani, 2-50 (B)  
 senex, 1-20 (S)  
 simplex, 1-24 (S)  
 spretus, 55-482  
 suavis, 47-1398 (B)  
 ventralis, 35-326 (B)  
 vicarius, 35-321 (B)
- Liparochrus dilatatifrons*, 35-272 (B)  
 hackeri, 42-40 (B)  
 nitidicollis, 35-273 (B)  
 rufus, 44-25 (B)
- Lipernes*, 5-211  
 angulatus, 5-212 (B)  
 creber, 18-240 (B)  
 gibbosus, 18-240 (B)  
 subviridis, 11-72 (B)
- Lipothyrea variabilis*, 47-1448 (S)
- Lispinus sulcipennis*, 30-27 (B)
- Lissodema frigidum*, 10-335 (B)
- Lithocharis lindi*, 2-48 (B)  
 varicornis, 9-72 (B)
- Lithostrotus*, 16-200  
 coerulescens, 16-200 (B)  
 planior, 33-362
- In error Mr. Blackburn marked the type as *laticornis*, but no such name has been published. The type has been sent to the British Museum with an explanatory note.
- Litocerus alpicola*, 9-98 (B)  
 Sent as *Parasemus alpicola*  
 alternans, 9-95 (B)  
 baccæformis, 31-293 (B)  
 coloratus, 18-207 (B)  
 consors, 14-295 (B)  
 frigidus, 9-97 (B)  
 koebeli, 18-208 (B)  
 laticulus, 9-95 (B)  
 lateralis, 9-97 (B)
- Sent as *Parasemus lateralis*  
 lautus, 31-290 (B)  
 maculatus, 9-96 (B)  
 major, 9-97, 18-208 (B)  
 maritimus, 32-111 (B)  
 noteroideus, 18-208 (B)  
 obscuricollis, 31-292 (B)  
 palmerstoni, 9-95 (B)  
 perparvus, 31-291 (B)  
 plagiatu, 31-289 (B)  
 pulchellus, 18-207 (B)  
 sparsus, 31-290 (B)  
 suturellus, 9-96 (B)
- Sent as *Parasemus suturellus*  
 sydneyensis, 11-26 (B)  
 tinctus, 18-208 (B)  
 uniformis, 9-98 (B)
- Sent as *Parasemus uniformis*.
- Lixionica*, 78-280  
 costatipennis, 78-281 (B)
- Longitarsus victoriensis*, 19-76 (B)
- Loxandrus lævicollis*, 56-96 (B)  
 micans, 56-97 (B)  
 micantior, 33-261 (B)
- Lucanidæ*, 18-25, 20-233, 21-23, 22-88,  
 60-94, 76-207
- Luciola cowleyi*, 21-34 (B)
- Lyctus costatus*, 4-265 (B)  
 discedens, 4-267 (B)  
 parallellocollis, 4-266 (B)
- Lygesis ornata*, 11-63 (N)
- Lymexylon adelaidæ*, 25-34 (N)
- Lymexylonidæ*, 10-306, 25-34
- Macleayia*, 1-29  
 Both species sent under *Microthopus*  
 hybrida, 1-30 (B)  
 singularis, 1-29 (B)
- Macratia victoriensis*, 10-336 (B)
- Macrogyrus fortissimus*, 29-126 (B)  
 opacior, 29-127 (B)
- Macrohelodes*, 57-298  
 crassus, 57-298 (B)  
 gravis, 57-299 (B)  
 intricatus, 57-299 (B)  
 lucidus, 57-298 (B)  
 tasmanicus, 21-33 (B)
- Macromalocera affinis*, 53-562 (S)  
 sinuaticollis, 53-563 (B)
- Macrones besti*, 37-296 (B)  
 debilis, 48-452 (B)
- Macroua baileyi*, 9-108 (B)  
 bicalcarata, 31-309 (B)  
 deceptor, 9-108 (B)  
 inermis, 31-310 (B)
- Mæchidius antennalis*, 23-62 (B)  
 capitalis, 37-283 (B)  
 caviceps, 46-846 (S)  
 clypealis, 60-95 (B)  
 collaris, 23-60 (B)  
 orenaticollis, 1-16 (B)  
 excisicollis, 23-62 (S)  
 gibbicollis, 23-59 (B)  
 imitator, 23-60 (B)  
 major, 1-16 (B)  
 modicus, 23-61 (B)  
 multistriatus, 23-61 (B)  
 ordensis, 23-60 (B)  
 raucus, 37-281 (B)  
 relictus, 37-282 (B)  
 rugosipes, 1-17 (B)  
 sinuaticeps, 47-1396 (S)  
 tibialis, 12-210 (B)
- Malacodermidæ*, 4-258, 12-220, 16-208,  
 21-34, 26-51, 27-115, 44-38, 47-  
 1424, 55-524, 58-187
- Maleuterpes*, 59-254  
 spinipes, 59-255 (B)
- Mastochilus capitalis*, 76-209 (B)
- Maulia*, 11-65  
 pcticornis, 11-66 (N)
- Medicasta lugubris*, 56-131 (B)  
 obscura, 47-1454 (S)
- Megamerus mandilularis*, 11-67 (N)
- Megasceloides circumcinctus*, 26-65  
 (B)

- Melandryidae**, 4-283, 22 94  
**Melobasis andersoni**, 4-234 (B)  
 beltanensis, 55-499 (B)  
 bicolor, 10-295 (N)  
 derbyensis, 11-44 (N)  
 elderi, 44-35 (S)  
 interstitialis, 29 130 (B)  
 intricata, 4-243 (B)  
 meyricki, 4-238 (B)  
 monticola, 55-496 (B)  
 pretiosa, 4-244 (S)  
 pulchra, 10-294 (N)  
 puncticollis, 4-239 (S)  
 rothei, 4-236 (B)  
 rotundicollis, 4-241 (B)  
 semistriata, 4-235 (S)  
 semisuturalis, 4-246  
 sordida, 4-238 (B)  
 soror, 4-237 (B)  
 speciosa, 4-245 (B)  
 subcyanea, 57-287 (B)  
 thomsoni, 8-148 (Sub)  
 thoracica, 4-246 (B)  
 vittata, 4-242 (B)  
**Menophilus sydneyanus**, 13-132 (B)  
**Menippus elegans**, 52-362 (B)  
 Sent as *Adimonia elegans*  
 maculicollis, 47-1501 (S)  
 quadrinotatus, 52-363 (B)  
 Sent as *Adimonia quadrinotatus*.  
**Merimnetes æqualifrons**, 59-259 (B)  
**Meriphus humeralis**, 56-146 (B)  
 lineatus, 53-591 (B)  
 raucus, 53-590 (B)  
**Meryx æqualis**, 9-115 (B)  
**Mesetia**, 19-37  
 amena, 19-37 (B)  
**Metabasis variegata**, 10-304 (B)  
**Metaxymorpha gloriosa**, 16-207 (N)  
**Metistete incognita**, 78-280 (B)  
 lindi, 47-1438 (B)  
**Metoponcus cairnsensis**, 18-204 (B)  
**Metriorrhynchus cliens**, 26-53 (B)  
 eremita, 26-55 (B)  
 flagellatus, 26-53 (B)  
 gigas, 55-524 (B)  
 insignipennis, 26-52 (B)  
 lætus, 55-527 (B)  
 mentitor, 26-54 (B)  
 meyricki, 4-258 (B)  
 miles, 26-54 (B)  
 monticola, 55-526 (B)  
 occidentalis, 55-526 (B)  
 paradoxa, 26-55 (B)  
 semioostatus, 55-525 (B)  
 vittatus, 4-258 (B)  
**Micrantipha**, 19-88  
 paradoxa, 19-89 (B)  
**Microchaetes coloratus**, 32-176 (B)  
 nigrovarius, 32-175 (B)  
 solidus, 32-175 (B)  
**Microdonacia**, 13-139  
 incerta, 13-139 (B)  
**Microfaronia**, 49-738  
 adelaidæ, 49-739 (B)  
**Microthagus cairnsensis**, 76 222 (B)  
**Microtragus albidus**, 49-743 (B)  
 assimilis, 49-742 (B)  
 junctus, 47-1468 (B)  
 maculatus, 49-744 (B)  
 quadrimaculatus, 12-235 (B)  
**Microvalgus scutellaris**, 16-206 (B)  
 yilgarnensis, 56-114 (B)  
**Midus pygmæus**, 12-261 (B)  
**Mimemodes koebeli**, 31-311 (B)  
**Misophrice argentata**, 52-340 (B)  
 dispar, 15-161 (B)  
 munda, 52-351 (B)  
 oblonga, 52-350 (B)  
 parallela, 52-353 (B)  
 quadraticollis, 15-163 (B)  
 setulosa, 52-351 (B)  
 spiliota, 15-162 (B)  
 squamosa, 52-352 (B)  
 submetallica, 52-349 (B)  
 variabilis, 52-348 (B)  
**Misthosima dorsonotata**, 27-161 (B)  
**Momæa eximia**, 19-84 (B)  
**Monocrepidius alpicola**, 55-511 (B)  
 angustipes, 53-561 (N)  
 baldiensis, 55-514 (B)  
 commodus, 17-48 (S)  
 fortis, 47-1422 (B)  
 frontalis, 55-510 (B)  
 inamœnus, 17-49 (B)  
 ingens, 57-291 (B)  
 juvenis, 47-1420 (B)  
 macleayi, 55-512 (B)  
 mentitor, 57-294 (B)  
 narrabrensis, 57-293 (B)  
 olliffi, 57-295 (B)  
 oveniensis, 55-514 (B)  
 palmerstoni, 47-1421 (S)  
 picticollis, 57-293 (B)  
 ruficollis, 55-509 (B)  
 tepperi, 47-1419 (S)  
 terræ-reginæ, 57-292 (B)  
 variegatus, 47-1422 (B)  
**Monohammus frenchi**, 55-543 (N)  
**Monolepta albotincta**, 19-99 (B)  
 alpina, 60-108 (B)  
 angulata, 5-179 (B)  
 benallæ, 55-549 (B)  
 biguttigera, 19-94 (B)  
 brevior, 19-93 (B)  
 cognata, 19-94 (B)  
 debilis, 19-98 (B)  
 dilutior, 19-91 (B)  
 divisa, 5-180 (B)  
 elytrura, 19-93 (B)  
 eyrensis, 19-95 (B)  
 fasciatipennis, 5-180 (B)  
 froggatti, 55-549 (B)  
 fumaticornis, 19-92 (B)  
 implicata, 19-91 (B)  
 inconspicua, 5-181 (B)  
 intertincta, 19-96 (B)  
 melancholica, 19-97 (B)  
 meyricki, 5-181 (B)  
 modesta, 5-182 (B)  
 nigricornis, 52-365 (B)

- Monolepta occidentalis*, 5-182 (B)  
*ordinaria*, 19-97 (B)  
*picticollis*, 19-98 (B)  
*pictifrons*, 19-97 (B)  
*quesita*, 5-183 (B)  
*rosea*, 52-364 (B)  
*simulatrix*, 5-183 (B)  
*sordidula*, 19-96 (B)  
*sparsipennis*, 19-92 (B)  
*subsuturalis*, 19-95 (B)  
*tarsalis*, 19-99 (B)  
*tepperi*, 47-1502 (S)  
*tricolor*, 19-95 (B)  
*variegata*, 19-94 (B)  
*Monotomidae*, 31-311  
*Mordella baldiensis*, 10-341 (B)  
*cara*, 13-137 (B)  
*inuitata*, 13-136 (B)  
*maculatissima*, 13-136 (B)  
*obscurior*, 44-46 (S)  
*rufimanus*, 44-46 (B)  
*sydneyana*, 13-137 (B)  
*Mordellidae*, 10-341, 13-136, 44-46  
*Morphosphæra cincta*, 5-177 (B)  
*Mycella clavicornis*, 52-366 (B)  
*Mycetæa pilosella*, 9-122 (B)  
*Mycetophagidae*, 4-205, 9-122, 16-204, 32-156  
*Mycetoporus floralis*, 43-3 (B)  
*Myllæna palmensis*, 78-262 (B)  
*Myllocerus bovilli*, 59-267 (B)  
*darwini*, 47-1443 (S)  
*fasciatus*, 47-1442 (S)  
*speciosus*, 59-268 (B)  
*tatei*, 78-284 (B)  
*torridus*, 59-267 (B)  
*Myositta crucigera*, 56-147 (B)  
*munda*, 56-147 (B)  
*Myrabolia lindensis*, 11-31 (B)  
*longicollis*, 32-149 (B)  
*longicornis*, 32-148 (B)  
*parva*, 11-32 (B)  
*Natalis constricta*, 8-124 (B)  
Sent as (*ormodes constricta*)  
*debilis*, 27-120 (B)  
*fasciata*, 8-125 (B)  
*hirta*, 8-122 (B)  
*inconspicua*, 8-124 (B)  
*integra*, 25-30 (B)  
*laevicollis*, 25-31 (B)  
*leai*, 25-30 (B)  
*longicollis*, 8-126 (B)  
*lugubris*, 8-123 (B)  
*planipennis*, 25-32 (B)  
*semicostata*, 47-1427 (B)  
*spinicornis*, 8-123 (B)  
*Neaspis pusilla*, 9-112 (B)  
*Neda bicolor*, 12-238 (B)  
*picturata*, 18-239 (B)  
*Nenemia thoracica*, 21-37 (B)  
*virgata*, 21-38 (B)  
*Neobethelium*, 58-196  
*megacephalum*, 58-196 (B)  
*Neobubastes*, 12-213  
*aureocincta*, 12-213 (N)  
*scutalis*, 12-213 (B)  
*Neocavonus*, 4-225  
*bidens*, 20-254 (B)  
*niger*, 4-225 (B)  
*occidentalis*, 4-226 (B)  
*Neocelis innocuus*, 27-169 (B)  
*Neocuris dilataticollis*, 11-42 (B)  
*fairmairei*, 4-249 (S)  
*nigricans*, 11-43 (B)  
*pubescens*, 4-250 (B)  
*Neodiaphanops*, 25-95  
*froggatti*, 25-95 (B)  
*Neoheteronyx*, 50-1255  
*lividus*, 50-1255 (B)  
*Neohydrobius*, 24-221  
*Neolepidiota*, 7-86  
*obscura*, 7-87 (B)  
*Neolybæba*, 45-193  
*remota*, 45-193 (S)  
*Neolycaon*, 26-49  
*Neomerimnetes*, 76-226  
*destructor*, 76-227 (B)  
*Neophyllotocus*, 23-27  
*Neorupilia*, 5-177  
*ornata*, 19-85 (B)  
*stirlingi*, 50-1274 (B)  
*viridis*, 5-177 (B)  
*Neosalpingus*, 10-334  
*corticalis*, 10-334 (B)  
*denticollis*, 10-334 (B)  
*Neoscrobiger*, 27-136  
*raucoiceps*, 27-137 (B)  
*Neospades*, 4-251  
*lateralis*, 46-860 (B)  
*simplex*, 46-861 (B)  
*Neostenus spinipennis*, 18-223 (S)  
*Neso*, 23-45  
*ducalis*, 37-274 (B)  
*planicollis*, 23-46 (B)  
*usta*, 23-45 (B)  
*yorkensis*, 23-46 (B)  
*Niphobolus*, 14-314  
*deceptor*, 14-315 (B)  
*Nisotra submetallica*, 60-107 (B)  
*unicolor*, 47-1493 (S)  
*Nitidulidae*, 8-121, 9-101, 11-26, 16-203, 17-31, 31-299, 32-112, 33-262, 44-24  
*Nocar*, 10-328  
*debilis*, 10-329 (B)  
*latus*, 10-329 (B)  
*simplex*, 10-330 (B)  
*Nosphisthis*, 23-38  
*parvicornis*, 23-39 (B)  
*perkinsi*, 37-267 (B)  
*Notiocyphon*, 78-272  
*convexus*, 78-272 (B)  
*Notoberosus*, 17-30  
*zietzi*, 17-30 (S)  
*Notobrachypterus*, 11-26  
*australis*, 11-27 (B)  
*bifoveatus*, 11-28 (B)  
*crassiusculus*, 31-299 (B)  
*creber*, 11-27 (B)  
*hilliputanus*, 11-29 (B)  
*lutescens*, 31-299 (B)

- Notobrachypterus nitidiusculus*, 11-28 (B)  
     *pauillus*, 31-300 (B)  
*Notocercyon*, 24-230  
     *ornatum*, 24-230 (B)  
*Notoceresium*, 28-32  
     *impressiceps*, 28-33 (B)  
     Sent as *Neoceresium impressiceps*  
*Notocia*, 27-159  
     *reticulata*, 27-160 (B)  
*Notolipernes*, 26-68  
*Notomulciber*, 15-166  
     *carpentariae*, 15-166 (N)  
*Notophilus*, 4-185  
     *gracilis*, 4-186 (B)  
     *latus*, 4-187 (B)  
     *montanus*, 54-780 (B)  
     *niger*, 4-186 (B)  
     *palustris*, 4-188 (B)  
     *parvus*, 4-187 (B)  
*Notosalpingus*, 10-333  
     *ornatus*, 10-333 (B)  
*Novapus adelaidae*, 4-215 (B)  
     *bidentatus*, 17-39 (B)  
     *laticollis*, 50-1251 (B)  
     *nitidus*, 17-38 (B)  
     *rugosicollis*, 52-305 (B)  
     *striatopunctulatus*, 4-215 (S)  
*Novius bellus*, 5-189 (B)  
     *discoidalis*, 18-253 (B)  
     *limbatus*, 18-254 (B)  
     *lindi*, 5-188 (B)  
     *ruber*, 6-148 (B)  
     *simplicipennis*, 18-253 (B)  
     *tripustulatus*, 18-254 (B)  
*Nullarbarica*, 41-202  
     *concinna*, 41-202 (B)  
*Nyctozoilus approximatus*, 78-277 (B)  
     *crassicornis*, 78-276 (B)  
     *inaequalis*, 78-277 (B)  
     *irregularis*, 78-278 (B)  
     *sloanei*, 60-103 (B)  
*Ochthebius australis*, 46-835 (B)  
     *brisbanensis*, 24-229 (B)  
     *novicius*, 78-260 (N)  
*Ocnodus fallax*, 44-28 (S)  
     *ferrugineus*, 44-28 (S)  
     *lepidus*, 26-38 (B)  
     *lugubris*, 56-105 (B)  
     *porosus*, 37-280 (B)  
     *scissiceps*, 37-279 (B)  
     *spiniacollis*, 44-27 (S)  
     *suspiciosus*, 37-279 (B)  
*Oedemeridae*, 10-341, 13-135, 17-55, 25-70, 28-26, 58-187  
*Oedichirus andersoni*, 43-10 (B)  
*Opophronistus*, 30-20  
     *australicus*, 30-21 (B)  
*Oides ignota*, 19-80 (B)  
     *insignipennis*, 19-79  
     *ocularis*, 19-80 (B)  
     *plantarum*, 19-82 (B)  
     *silphomorphoides*, 47-1497  
     *soror*, 47-1496 (S)  
     *tepperi*, 47-1495 (S)  
     *tigrina*, 19-81 (B)  
     *Oides velata*, 19-82 (B)  
*Olanæa læta*, 52-345 (B)  
     *maculata*, 53-589 (B)  
     *mentitrix*, 15-152 (B)  
     *metropolitana*, 15-152 (B)  
*Olbiodoros*, 14-302  
     *hirsutus*, 14-303 (B)  
*Olibrus victoriensis*, 9-101 (B)  
     Sent as *Parasemus victoriensis*  
*Omorphopus*, 15-157  
     *seriatus*, 15-157 (B)  
*Onthophagus aureoviridanus*, 33-289  
     *blackwoodensis*, 12-208 (B)  
     *bovilli*, 33-278  
     *carmodensis*, 37-233 (B)  
     *carteri*, 77-147 (B)  
     *comperei*, 33-295 (B)  
     *cowleyi*, 33-272 (B)  
     *dumbrelli*, 33-297 (B)  
     *fitzroyensis*, 33-288 (S)  
     *fletcheri*, 33-298 (B)  
     *frenchi*, 33-293 (B)  
     *geelongensis*, 11-34 (S)  
     *helmsi*, 33-290 (B)  
     *henleynensis*, 12-208 (B)  
     *howitti*, 33-282 (B)  
     *jungi*, 77-148 (B)  
     *koebelei*, 33-291 (B)  
     *leai*, 17-31 (B)  
     *macleayi*, 33-289 (B)  
     *margaretensis*, 33-299 (S)  
     *murchisoni*, 44-25 (S)  
     *negatorius*, 33-297 (B)  
     *nitidior*, 12-209 (B)  
     *palmerstoni*, 33-275 (B)  
     *pontilis*, 33-291 (B)  
     *pugnaciior*, 33-277 (B)  
     *queenslandicus*, 33-287 (B)  
     *sloanei*, 33-276 (B male, S female)  
     *submuticus*, 33-294 (B)  
     *subocelliger*, 33-299 (B)  
     *sydneyensis*, 33-296 (B)  
     *tamworthi*, 33-292 (B)  
     *tweedensis*, 33-285 (B)  
     *victoriensis*, 33-293  
     *zietzi*, 33-283 (S)  
*Opetiapteryx*, 56-125  
     *frigida*, 56-126 (B)  
*Ophryota rapax*, 78-295 (B)  
*Ophthalmorychus*, 59-256  
     *angustus*, 59-257 (B)  
*Opisthopygme*, 19-67  
     *jacobyi*, 19-68 (B)  
*Opsidota guttata*, 11-64 (B)  
     *cestuosa*, 19-37 (B)  
     *sculpticollis*, 28-33 (B)  
*Orcus coelestis*, 9-153 (B)  
     Originally printed *coelestris*  
     *lecanii*, 18-239 (B)  
     *obscurus*, 12-241 (B)  
     *ovalis*, 12-241 (B)  
     *punctulatus*, 12-240 (B)  
     *splendens*, 12-240 (B)  
*Oricopsis guttatus*, 15-167 (B)

- Oroderes uniformis*, 48-452 (B)  
*Orophius dilutipes*, 10 308 (B)  
*Orthorhinus bicolor*, 56-139 (B)  
*Ospidus gibbus*, 22-94 (B)  
*Ovacis caviceps*, 25-81 (B)  
   *inquisitor*, 25-80 (B)  
   *linearis*, 25-82 (B)  
   *ornatipennis*, 25 80 (B)  
*Oxyops armatus*, 47-1451 (S)  
   *interruptus*, 47-1449 (S)  
   *lateritius*, 47-1451 (S)  
   *maculata*, 47-1453  
   *modicus*, 47-1452 (S)  
   *parallelus*, 47-1450 (S)  
   *pictipennis*, 15-143 (B)  
   *placida*, 15-143 (B)  
   *sicca*, 78-295 (B)  
   *spenceri*, 78 296 (B)  
*Oxytelus flavior*, 30-24 (B)  
   *parumpunctatus*, 30 25 (B)  
   *wattsensis*, 30-23 (B)  
*Pachydissus boops*, 8-128 (B)  
   *frenchi*, 18-222 (B)  
   *tatei*, 8-129  
*Pachygastra victoriæ*, 22-90 (B)  
*Pachyura minima*, 18-221 (B)  
*Pæderus adalaidæ*, 43-10 (B)  
   *koebelei*, 25-23 (B)  
   *meyricki*, 9-72 (B)  
   *simsoni*, 50 92 (B)  
   *tweedensis*, 25-22 (B)  
*Palmerstonia*, 46-855  
   *bovilli*, 46-857 (B)  
   *minor*, 15-139 (B)  
   *pusilla*, 20-253 (B)  
*Panelus arthuri*, 76-211 (B)  
*Panschizus*, 2-51  
   *pallidus*, 2-51 (B)  
*Paphora miles*, 36-324 (B)  
   *pulchra*, 36-323 (B)  
   *robustior*, 58-195 (N)  
*Paracadmus maculatus*, 8 135 (S)  
*Paracephala aenea*, 10-302 (B)  
   *cyaneipennis*, 13-130 (B)  
*Paracupta bellicosa*, 32-181 (B)  
   Sent as (*halcophora bellicosa*)  
*Paracymus eremita*, 78-257 (B)  
   *horni*, 78-257 (B)  
   *lindi*, 46-821 (B)  
   *nigerrimus*, 9-66 (B)  
   *spenceri*, 78-256 (B)  
   *sublineatus*, 46-821 (B)  
*Paralepidiota*, 41-196  
   *lepidoptera*, 42-51 (B)  
*Paramarteon*, 22-94  
   *mutabile*, 22-95 (B)  
*Parandra frenchi*, 17-57 (N)  
*Parapylus*, 10-305  
*Pararhopæa*, 41-197  
*Parasaphes bicolor*, 27-115 (B)  
   *quinesulcatus*, 27-114 (B)  
*Parasemus adumbratus*, 31-296 (B)  
   *comes*, 18-212 (B)  
   *discoideus*, 18-211 (B)  
   *doctus*, 18-212 (B)  
*Parasemus internatus*, 18-213 (B)  
   *mitchelli*, 25-24 (B)  
   *modestus*, 18-212 (B)  
   *obsoletus*, 18-213 (B)  
   *pallidus*, 31-297 (B)  
   *torridus*, 18-211 (B)  
*Parmenomorpha*, 47-1467  
   *irregularis*, 47 1467 (S)  
*Parnidæ*, 60-94  
*Paromalus ludovici*, 11-26 (B)  
   *saucius*, 32-103 (B)  
   *terræ-reginæ*, 32-103 (B)  
*Paropsis abjecta*, 69 66 (B)  
   *acclivis*, 37-296 (B)  
   *adalaidæ*, 70-173 (B)  
   *advena*, 16-230 (B)  
   *ænea*, 8-143 (B)  
   *affinis*, 16-229 (B)  
   *alpina*, 69 690 (B)  
   *alta*, 69-688 (B)  
   *alticola*, 69-672 (B)  
   *angusta*, 74-173 (B)  
   *angusticollis*, 16-230 (B)  
   *angustipes*, 71 236 (B)  
   *annularis*, 73-509 (B)  
   *anomala*, 74-191 (M)  
   *arethusa*, 72-689 (B)  
   *armata*, 69-648 (B)  
   *atalanta*, 71-261 (B)  
   *aurea*, 73 497 (B)  
   *badia*, 71-247 (B)  
   *baldienusis*, 69-659 (B)  
   *bella*, 16-236 (B)  
   *bicolora*, 70-179 (B)  
   *blanda*, 70-170 (B)  
   *blandina*, 74-184 (B)  
   *borealis*, 69-691 (B)  
   *bovilli*, 16-231 (B)  
   *brevissima*, 70-175 (B)  
   *caliope*, 72-679 (B)  
   *calypso*, 72-679 (B)  
   *carpentariæ*, 70-178 (B)  
   *cassiope*, 74-185 (B)  
   *oerea*, 16-228 (B)  
   *chapuisi*, 69-649 (B)  
   *clio*, 72-686 (B)  
   *colorata*, 16-232 (B)  
   *comma*, 69-657 (B)  
   *complicata*, 72-673 (B)  
   *confusa*, 8-142 (S)  
   *conjungens*, 78-303 (B)  
   *convexa*, 16-235 (B)  
   *creberrima*, 70-171 (B)  
   *crebra*, 70-184 (B)  
   *cribrata*, 69-670 (B)  
   *cygnicola*, 70 174 (B)  
   *daphne*, 72-687 (B)  
   *debilitata*, 16-227 (B)  
   *declivis*, 69-671 (B)  
   *deserti*, 78-303 (B)  
   *diemenensis*, 70-185  
   Var. of *tetraspilota*, in collection Aug  
   Simson.  
   *difficilis*, 71-237 (B)  
   *dryope*, 73-516 (B)  
   *dulcior*, 71-231 (B)

- Paropsis echo*, 74-190 (B)  
*elytrura*, 74-178 (B)  
*erubescens*, 72-681 (B)  
*excisipennis*, 74-195 (B)  
*exsul*, 69-665 (B)  
*extranea*, 69-647 (B)  
*eyrensis*, 70-188 (B)  
*foveata*, 69-662 (B)  
*froggatti*, 8-145 (B)  
*fumata*, 70-177 (B)  
*funerea*, 78-306 (B)  
*galatea*, 72-676 (B)  
*gibbosa*, 8-139 (B)  
*glaucia*, 16-232 (B)  
*gloriosa*, 73-510 (B)  
*gracilipes*, 71-249 (B)  
*grossa*, 69-682 (B)  
*hebe*, 72-677 (B)  
*hygea*, 74-176 (B)  
*inæqualis*, 69-689 (B)  
*inconstans*, 73-502  
*inops*, 70-168 (B)  
*inornata*, 69-688 (B)  
*insolens*, 69-645 (B)  
*insularis*, 8-139 (S)  
*interioris*, 69-683 (B)  
*intermedia*, 16-237 (B)  
*invalida*, 69-675 (B)  
*io*, 71-260 (B)  
*irene*, 72-699 (B)  
*karattæ*, 69-651 (B)  
*lævipennis*, 69-652 (B)  
*lateralis*, 45-201 (S)  
*latipes*, 55-546 (B)  
*latissima*, 16-235 (B)  
*latona*, 74-184 (B)  
*leai*, 69-685 (B)  
*lima*, 69-675 (B)  
*longicornis*, 16-228 (B)  
*lucina*, 73-517 (B)  
*maculiceps*, 69-686 (B)  
*madida*, 71-254 (B)  
*malevola*, 69-684 (B)  
*manto*, 74-174 (B)  
*medea*, 72-693 (B)  
*mediocris*, 69-667 (B)  
*mentitrix*, 71-239 (B)  
*meyricki*, 8-141 (B)  
*mimula*, 8-142 (B)  
*minerva*, 73-494 (B)  
*mintha*, 74-180 (B)  
*mixta*, 69-661 (B)  
*montana*, 16-226 (B)  
*montuosa*, 69-663 (B)  
*morosa*, 69-680 (B)  
*mutabilis*, 16-234 (B)  
*mystica*, 16-233 (B)  
*niobe*, 72-696 (B)  
*nitidissima*, 8-140 (B)  
*notabilis*, 69-692 (M)  
*nupta*, 71-252 (B)  
*oenone*, 72-699 (B)  
*omphale*, 74-179 (B)  
*opaciceps*, 71-255 (B)  
*palmensis*, 78-305 (B)  
*pandora*, 73-517 (B)
- Paropsis philomene*, 74-194 (B)  
*planior*, 72-683 (B)  
*polyxo*, 74-192 (B)  
*posticalis*, 78-306 (B)  
*prodroma*, 70-174 (B)  
*propria*, 69-699 (B)  
*pulverulenta*, 72-676 (B)  
*punctipennis*, 70-169 (B)  
*pustulifera*, 69-687 (B)  
*pustulosa*, 69-660 (B)  
*quadrizonata*, 70-186 (B)  
*raucicollis*, 73-501 (B)  
*raucipennis*, 69-650 (B)  
*regularis*, 55-547 (B)  
*rosea*, 69-664 (B)  
*rostralis*, 73-519 (B)  
*rubidipes*, 74-183 (B)  
*ruficollis*, 69-668 (B)  
*rufobrunnea*, 71-234 (S)  
*rufopicta*, 12-237 (B)  
*rugulosior*, 69-679 (B)  
*rustica*, 69-652 (B)  
*selenæ*, 74-193 (B)  
*semifumata*, 74-195 (B)  
*semivittata*, 71-232 (B)  
*simplex*, 70-184 (B)  
*simsoni*, 73-500 (B)  
*simulans*, 69-666 (B)  
*sloanei*, 69-681 (B)  
*solitaria*, 69-674 (B)  
*sordida*, 69-661 (B)  
*sospita*, 74-181 (B)  
*squircensis*, 45-201 (S)  
*sternalis*, 69-646 (B)  
*stigma*, 69-680 (B)  
*subcineta*, 71-244 (B)  
*sylvicola*, 69-658 (B)  
*tarsalis*, 70-189 (B)  
*tatei*, 69-671 (B)  
*tenuicornis*, 72-672 (B)  
*testaceiceps*, 71-230 (B)  
*thyone*, 74-182 (B)  
*tincticollis*, 69-684 (B)  
*transversalis*, 69-676 (B)  
*variegata*, 16-233 (B)  
*versuta*, 70-172 (B)  
*vesta*, 73-518 (B)  
*vibex*, 70-179 (B)  
*victoriæ*, 69-673 (B)  
*vittata*, 73-508 (B)  
*vornica*, 69-693 (B)  
*vulpina*, 70-176 (B)  
*whittonensis*, 69-669 (B)  
*yilgarnensis*, 55-545  
*zietzi*, 16-236 (S)
- Paryzeta vittata*, 15-151 (B)  
*Paussidæ*, 9-68, 11-24  
*Paussus australis*, 9-68 (B)  
*Pedilidæ*, 10-335, 52-311, 78-281  
*Pelorrhinus crassus*, 56-135 (B)  
*proximus*, 56-134 (B)  
*Peltonyxa australis*, 9-113 (B)  
*invalida*, 31-312 (B)  
*pubescens*, 9-113 (B)  
*Penthea mastersi*, 22-97 (B)  
*tigrina*, 28-37 (B)



- Pentodon australis*, 4-216 (B)  
*Pephris nanus*, 59-270 (B)  
     *squalidus*, 12-232 (B)  
     *umbratus*, 12-231 (B)  
     *vittaticeps*, 59-269 (B)  
*Periptyctus*, 18-234  
     *russulis*, 18-234 (B)  
*Perperus convexipennis*, 28-28 (B)  
*Petinopus*, 23-35  
     *ægrotus*, 23-36 (B)  
*Phacodes bellus*, 10-343 (B)  
     *marmoratus*, 10-344 (B)  
     *modicus*, 28-31 (B)  
     *occidentalis*, 58-192 (N)  
     *validus*, 10-342 (B)  
*Phalacridæ*, 9-94, 11-26, 14-295, 18-205,  
     25-25, 31-289, 32-111  
*Phalacrinus*, 9-99  
     *australis*, 9-99 (B)  
     *comis*, 18-215 (B)  
     *compressus*, 31-297 (B)  
     *dilutior*, 18-215  
     Var of *notabilis*  
         *navicularis*, 31-298 (B)  
         *notabilis*, 18-214 (B)  
         *obtusius*, 9-100 (B)  
         *rotundus*, 9-100 (B)  
         *umbratus*, 31-297 (B)  
*Phalacrus burruddiensis*, 9-101 (B)  
*Phalota obscura*, 48-454 (B)  
*Philhydrus*, 17-29  
     *andersoni*, 78-257 (B)  
     *burrundensis*, 48-447 (B)  
     *deserticola*, 78-258 (B)  
     *eyrensis*, 17-29 (B)  
     *lævigatus*, 46-822 (B)  
*Philonthus glenelgi*, 32-94  
     *ornatus*, 2-47 (B)  
*Philophæus confertus*, 56-78 (B)  
     *laticollis*, 56-77 (B)  
     *monticola*, 56-75 (B)  
     *occidentalis*, 53-553 (B)  
     *opaciceps*, 49-714 (B)  
     *ornatus*, 44-19 (S)  
     *pygmæus*, 44-19 (S)  
     *sydneyensis*, 56-76 (B)  
     *tasmaniae*, 56-78  
     Var of *encalypti*.  
*Philoscaphus crassus*, 2-37 (S)  
     *duboulayi*, 53-554 (B)  
     *tepperi*, 2-36 (S)  
*Phlæocarabus farinæ*, 29-112 (B)  
     *umbratus*, 49-709 (B)  
     *unimaculatus*, 49-708 (B)  
*Phoracantha elegans*, 58-192 (B)  
     *lætabilis*, 15-165 (N)  
     *posticalis*, 58-193 (B)  
*Phormesa carpentariae*, 32-118 (B)  
     *grouvellei*, 31-316 (B)  
     *thoracica*, 31-316 (B)  
*Phorticossomus brunneus*, 4-178 (S)  
     *calcaratus*, 33-261 (B)  
     *mucronatus*, 4-178 (B)  
     *randalli*, 49-722 (B)  
     *robustus*, 6-135 (B)  
     *similis*, 4-179 (B)
- Phyllocephala*, 50-1253  
     *nigrohirta*, 50-1254 (B)  
*Phyllotocidum*, 23-24  
*Phyllotocus dispar*, 7-83 (B)  
     *meyricki*, 1-15 (B)  
     *occidentalis*, 1-15 (B)  
*Phyllotreta australis*, 8-146 (B)  
*Physolesthus pallidus*, 50-1250 (B)  
*Pinelopus crassus*, 4-221 (B)  
     *dubius*, 4-222 (B)  
     *sydneyanus*, 20-256 (B)  
*Pinophilus latebricola*, 43-10 (B)  
*Plæsiorhinus*, 14-303  
     *notatus*, 14-304 (B)  
*Platycotylus coloratus*, 32-147 (B)  
*Platydemus championi*, 91-139 (Sub)  
     *fossulata*, 4-273 (B)  
     *obscura*, 47-1430 (B)  
     Name altered to *championi* and so sent  
         *victoriense*, 14-297 (B)  
*Platydesmus inamœnus*, 37-272 (B)  
     *inuitatus*, 37-272 (B)  
     *major*, 37-271 (B)  
     *punctulaticeps*, 38-363 (B male,  
         S female)  
*Platynus murrayensis*, 49-741 (B)  
*Platyomopsis frenchi*, 8-132 (B)  
*Platyomus baccæformis*, 18-242 (B)  
     *consimilis*, 18-244 (B)  
     *cribratus*, 18-242 (B)  
     *obscuricollis*, 18-244 (B)  
     Sent as *Scymnoides obscuricollis*  
         *terminalis*, 18-245 (B)  
*Platyphanes creber*, 12-225 (N)  
     *superbus*, 60-105 (N)  
<sup>13</sup> *Plectroscolis aciculata*, 19-63 (B)  
     *alpicola*, 19-61 (B)  
     *calida*, 19-59 (B)  
     *crassipennis*, 19-66 (B)  
     *crebra*, 19-62 (B)  
     *eyrensis*, 19-65 (B)  
     *hypocrita*, 19-63 (B)  
     *impressipennis*, 19-64 (B)  
     *lindensis*, 19-61 (B)  
     *longior*, 19-59 (B)  
     *meyricki*, 19-66 (B)  
     *minutalis*, 19-62 (B)  
     *noxia*, 19-59 (B)  
     *olliffi*, 55-548 (B)  
     *pallidior*, 19-65 (B)  
     *quadraticollis*, 19-65 (B)  
     *tumbyensis*, 19-63 (B)  
     *varipes*, 19-61 (B)  
*Polyoptilus costatus*, 25-97 (B)  
     *gracilis*, 8-133 (B)  
     *robustus*, 8-134 (B)  
     *torridus*, 25-98 (B)  
*Polyphrades fortis*, 59-276 (B)  
     *fulvus*, 59-273 (B)  
     *inconspicuus*, 59-279 (B)  
     *lætus*, 59-281 (B)  
     *laminatus*, 59-277 (B)  
     *modestus*, 59-274 (B)

<sup>13</sup> All sent as belonging to the genus *Chaetocnema*.

- Polyphrades perplexus*, 59-280 (B)  
*pictus*, 59-278 (B)  
*rostralis*, 59-272 (B)  
*rugulosus*, 44-52 (S)  
*safelles*, 53-575 (B)  
*tibialis*, 59-275 (B)  
*tumidulus*, 44-51 (S)  
*Porithea plagiata*, 58-193 (B)  
*Præonetha bimaculata*, 18-223 (B)  
*Sent as Præonotus binaculata*  
*Præonotus chapuisi*, (Sub)  
*Prasyptera mastersi*, 19-84 (B)  
*Prionopleura erudita*, 8-136  
*suturalis*, 8-137 (B)  
*Pristonychus australis*, 46-811 (B)  
*Proctammodes*, 11-37  
*minor*, 22-89 (B)  
*Promecoderus sloanei*, 28-19 (B)  
*Prosayleus intermedius*, 59-253 (S)  
*Prostomis gladiator*, 32-135 (B)  
*intermedius*, 22-83 (B)  
*Proxyrodes*, 44-48  
*maculatus*, 44-48 (S)  
*Proxyrus gibbicollis*, 59-261 (B)  
*Prypnus squamosus*, 56-115 (B)  
*Psammodius australicus*, 77-173 (B)  
*obscurior*, 77-173 (B)  
*P-ammæus incertior*, 32-154 (B)  
*T-notatus*, 32-154 (B)  
*upsilon*, 32-155 (B)  
*vittiferus*, 32-155 (B)  
*Pselaphidæ*, 6-136, 9-77, 10-292  
*Pseudananca*, 13-135  
*ruficollis*, 13-135 (B)  
*Pseudeba*, 32-119  
*novica*, 32-120 (B)  
*Pseudocædius*, 7-91  
*squamosus*, 7-91 (B)  
*Pseudocavonus*, 7-87  
*antennalis*, 7-88 (B)  
*Pseudocistela*, 10-316  
*ovalis*, 10-317 (B)  
*Pseudoheteronyx*, 56-111  
*creber*, 38-366 (B)  
*helæoides*, 56-111 (B)  
*laticollis*, 38-366 (B)  
*Pseudoholophylla*, 41-196  
*Pseudohydrobius*, 24-231  
*floricola*, 24-232  
*Pseudolacon*, 7-89  
*rufus*, 7-90 (B)  
*Pseudolyceus elegantulus*, 25-86 (B)  
*puberulus*, 25-87 (B)  
*torridus*, 28-26 (B)  
*Pseudoparopsis*, 25-99  
*Pseudopimelopus*, 4-217  
*lindi*, 4-218 (B)  
*Pseudoryctes monstrosus*, 17-39 (N)  
*tectus*, 12-211 (S)  
*trifidus*, 17-40 (M)  
*Pseudotoxotus*, 47-1470  
*lineata*, 47-1471 (S)  
*Psylliodes lubricata*, 19-78 (B)
- 14 Pterohelæus ater*, 4-279 (B)  
*bagotensis*, 78-274 (B)  
*brevicornis*, 37-294 (B)  
*fraternus*, 17-51 (B)  
*geminatus*, 51-153 (B)  
*gracilicornis*, 37-293 (B)  
*insignis*, 4-277 (B)  
*ovalis*, 4-281 (B)  
*puer*, 37-295 (B)  
*raucus*, 50-1266 (B)  
*regularis*, 37-292 (B)  
*simplicicollis*, 37-292 (B)  
*ventralis*, 37-294 (B)  
*Ptinidæ*, 10-306, 57-300  
*Ptenomerus interstitialis*, 32-131 (B)  
*robusticollis*, 32-131 (B)  
*sulcicollis*, 32-132 (B)  
*Pylus pygmæus*, 10-306 (B)  
*Pythidæ*, 10-322, 13-134  
*Quedius andersoni*, 43-6 (B)  
*baldiensis*, 9-69 (B)  
*diemensis*, 60-91 (B)  
*ferox*, 3-66 (B)  
*inconspicuous*, 43-5 (B)  
*koebelei*, 18-203 (B)  
*nelsonensis*, 32-93 (B)  
*pictipennis*, 11-21 (B)  
*tepperi*, 43-6 (S)  
*Rhaciodes forcipatus*, 15-154 (B)  
*simplex*, 59-283 (B)  
*strenuus*, 15-154 (B)  
*Rhadinomus tasmanicus*, 59-257 (B)  
*frater*, 59-258 (B)  
*Rhamphus australis*, 7-93 (B)  
*distinguendus*, 7-93 (B)  
*Rhinaria debilis*, 56-138 (B)  
*tibialis*, 56-136 (B)  
*Rhinobolus*, 48-463  
*nitidus*, 48-464 (B)  
*Rhinophthalmus modestus*, 48-451 (B)  
*Sent as Stephanops modestus*  
*Rhipidius australis*, 25-59 (B)  
*Rhipidoceridæ*, 20-258, 26-50, 44-38,  
 78-272  
*Rhipidophoridæ*, 25-51, 26-60, 45-178,  
 78-282  
*15 Rhizobius apicalis*, 12-256 (B)  
*approximatus*, 5-208 (B)  
*aurantii*, 12-255 (B)  
*australis*, 5-204 (B)  
*cæcus*, 11-71 (B)  
*cæruleus*, 12-256 (B)  
*crotchii*, 18-256 (B)  
*cyaneus*, 5-199 (B)  
*debilis*, 5-201 (B)  
*discipennis*, 18-257 (B)
- 14 In the British Museum list a species is noted as Pterohelæus subcylindricus. But I cannot find that Mr. Blackburn ever named such a species.*  
*15 In the British Museum list a species was noted as Rhizobius proprius. But I cannot find that Mr. Blackburn ever named such a species.*

- Rhizobius dorsalis*, 11-70 (B)  
*eminens*, 18-257 (B)  
*fasciculatus*, 12-256 (B)  
*fugax*, 11-70 (B)  
*gosfordensis*, 18-257 (B)  
*insipidus*, 5-201 (B)  
*laticollis*, 5-200 (B)  
*lanosus*, 11-71 (B)  
 Sent as *Erithionyx lanosus*  
*hindi*, 5-202 (B)  
*major*, 5-206 (B)  
*nigronotatus*, 12-253 (B)  
*nitidus*, 5-206 (B)  
*occidentalis*, 5-207 (B)  
*ornatipennis*, 12-253 (B)  
*plebeius*, 12-257 (B)  
*pulcher*, 11-71 (B)  
*ruficollis*, 5-202 (B)  
*satelles*, 12-255 (B)  
*secessus*, 19-108  
*speculifer*, 12-254 (B)  
*speratus*, 5-207 (B)  
*subaustralis*, 18-258 (B)  
*subfusca*, 5-205 (B)  
*toowoombæ*, 12-254 (B)  
*umbratus*, 5-208 (B)
- Rhodæa assimilis*, 41-191 (B)  
*callabonnensis*, 16-205 (S)  
*consanguinea*, 41-194 (B)  
*dubitans*, 41-193 (B)  
*hirtuosa*, 23-63 (B)  
*incognita*, 41-195 (B)  
*laticollis*, 41-192 (B)  
*magnicornis*, 4-210 (S)  
*morbillosa*, 23-64 (B)  
*mussoni*, 56-112 (B)  
*pilosa*, 41-191 (B)  
*planiceps*, 41-195 (S)  
*rugulosa*, 41-194 (B)  
*soror*, 56-112 (B)
- Rhomosternus minor*, 58-207 (B)  
*monticola*, 58-206 (B)  
*obscurus*, 58-205 (B)  
*pallidus*, 58-206 (B)
- Rhyparida æneotincta*, 47-1479 (S)  
*amplicollis*, 47-1481 (S)  
*discoapunctulata*, 47-1485 (S)  
*herbacea*, 47-1484 (S)  
*interioris*, 47-1486 (B)  
*mastersi*, 12-236 (B)  
*mediopicta*, 47-1480 (S)  
*piceitarsis*, 47-1483 (S)  
*posticalis*, 47-1482 (B)  
*punctulata*, 47-1482 (S)  
*satelles*, 47-1485 (S)  
*uniformis*, 47-1483 (S)
- Rhytiphora fasciata*, 60-106 (B)  
*frenchi*, 18-225 (N)  
*maculosella*, 31-320 (B)  
*simsoni*, 28-41 (B)  
*spenceri*, 21-38 (B)  
*uniformis*, 28-40 (B)
- Rhytisternus bovilli*, 49-728 (B)  
*cardwellensis*, 56-94 (N)  
*splendens*, 56-93 (B)  
*sulcatipes*, 46-809 (B)
- Rupilia angulaticollis*, 26-66 (B)  
*approximans*, 26-67 (B)  
*brevipennis*, 78-307 (B)  
*excelsa*, 19-85 (B)  
*impressa*, 47-1499 (B)  
*rugulosa*, 12-238 (B)  
*Saprinus australasiae*, 32-107 (B)  
*tyrrhenus*, 32-106 (B)  
*westraliensis*, 32-106 (B)  
*Saprosites mansuetus*, 77-175 (B)  
*sternalis*, 77-176 (B)  
*Saprus*, 77-178  
*griffithi*, 77-179 (B)  
*Saragodinus tuberculatus*, 46-873 (B)  
*Saragus addendus*, 78-275 (B)  
*inaequalis*, 46-867 (B)  
*latus*, 46-869 (S)  
*lindi*, 46-868 (B)  
*macleayi*, 46-871 (B)  
*mediocris*, 46-870 (B)  
*satelles*, 46-872 (B)  
*tricarinatus*, 44-43 (S)  
*Sarothrocrepis suavis*, 49-711 (B)  
*Sarothromerus*, 37-237  
*Sarrotrium australe*, 9-115 (B)  
*Sarticus brevicornis*, 44-23 (S)  
*obscurus*, 44-23 (S)  
*Sastra obscuricornis*, 19-84 (B)  
*Scaletomerus*, 10-330  
*harpaloides*, 10-330 (B)  
*proximus*, 10-331 (B)  
*Scaphidiidae*, 9-90, 32-97  
*Scaphidium alpicola*, 9-90 (B)  
*Scaphisoma fernshawense*, 32-99 (B)  
*novicum*, 9-91 (B)  
*perelegans*, 32-98 (B)  
*queenslandicum*, 32-98 (B)  
*Scarabæidae*, 1-15, 2-50, 4-206, 7-83,  
 8-159, 9-135, 10-293, 11-34,  
 12-208, 13-130, 15-139, 16-204,  
 17-31, 18-219, 20-234, 21-28,  
 22-88, 23-18, 25-25, 26-36, 27-113,  
 28-21, 33-262, 34-281, 35-270,  
 36-263, 37-233, 38-363, 40-146,  
 41-173, 42-40, 44-25, 46-842,  
 47-1393, 50-1251, 51-147, 52-305,  
 53-557, 55-481, 56-99, 57-283,  
 58-185, 59-245, 60-95, 76-211,  
 78-264  
*Sciastrophes*, 32-100  
*latus*, 32-100 (B)  
*Scimbalium agreste*, 43-8 (B)  
*lætum*, 43-9 (B)  
*Scirtes helmsi*, 55-524 (B)  
*Scitula ambigua*, 37-253 (B male, S  
 female)  
*celesensis*, 37-252 (B male, S  
 female)  
*convexicollis*, 37-248 (B)  
*coxalis*, 37-254 (B)  
*hospes*, 37-251 (B male, S  
 female)  
*ino*, 37-249 (B)  
*juvenis*, 37-256 (B)  
*nemesis*, 37-250 (B male, S  
 female)

- Scitula nemoralis*, 37-248 (B)  
*subsericans*, 37-256 (B)  
*Sciton*, 56-101  
   *paullus*, 23-47 (B)  
   *ruber*, 56-102 (B)  
   *varicollis*, 37-275 (B)  
*Sclerocyphon*, 55-523  
   *maculatus*, 55-523 (B)  
*Scolecobrotus simplex*, 47-1465 (B)  
   *validus*, 58-199 (N)  
   *variegatus*, 47-1466  
*Scolyptus obscuripes*, 50-1247 (B)  
*Scopæus dubius*, 9-73 (B)  
   *femorals*, 11-22 (B)  
   *latebricola*, 3-71 (B)  
   *obscuripennis*, 9-73 (B)  
*Scopodes flavipes*, 16-202 (B)  
   *intermedius*, 16-202 (B)  
   *intricatus*, 18-202 (B)  
   *rugatus*, 60-85 (B)  
   *simplex*, 16-201 (B)  
*Scaptia lunulata*, 22-95 (B)  
*Scymena australis*, 4-270 (B)  
*Scymnodes*, 5-189  
   *difficilis*, 5-190 (B)  
   *eugenæ*, 12-243  
   Var. of *koebelei*  
     *fulvohirtus*, 12-243 (B)  
     *immaculatus*, 12-243 (B)  
     *koebelei*, 11-69 (B)  
     *varipes*, 12-243  
   Var. of *koebelei*  
*Scymnomorpha*, 12-242  
   *duplopunctata*, 12-242 (B)  
*Scymnus ambulans*, 18-252 (B)  
   *aspersus*, 5-194 (B)  
   *aurugineus*, 5-196 (B)  
   *australasiæ*, 12-243 (B)  
   *australis*, 5-195 (B)  
   *brisbanensis*, 18-246 (B)  
   *casuarinæ*, 5-193 (B)  
   *cowleyi*, 18-248 (B)  
   *cucullifer*, 12-244 (B)  
   *ementitor*, 18-248 (B)  
   *flavifrons*, 5-195 (B)  
   *impictus*, 18-247 (B)  
   *inaffectatus*, 12-246 (B)  
   *insidiosus*, 5-191 (B)  
   *inuitatus*, 5-191 (B)  
   *jocosus*, 12-244 (B)  
   *kamerungensis*, 18-249 (B)  
   *lubricus*, 5-192 (B)  
   *mareebensis*, 18-249 (B)  
   *meyricki*, 5-192 (B)  
   *mitior*, 18-251 (B)  
   *notesoens*, 5-196 (B)  
   *obumbratus*, 18-247 (B)  
   *occidentalis*, 5-196  
   Var. of *flavifrons*  
     *operosus*, 18-246 (B)  
     *oscillans*, 5-197 (B)  
     *parallelus*, 5-198 (B)  
     *planulatus*, 18-251 (B)  
     *poonindiensis*, 5-193 (B)  
     *pretiosus*, 12-246 (B)  
     *queenslandicus*, 12-247 (B)  
*Scymnus sedani*, 5-197 (B)  
   *simplex*, 5-194 (B)  
   *styx*, 18-249 (B)  
   *subclarus*, 18-250 (B)  
   *subelongatulus*, 12-245 (B)  
   *subevanidus*, 16-250 (B)  
   *sublatus*, 12-246 (B)  
   *sydneyensis*, 12-243 (B)  
   *terræ-reginæ*, 18-247 (B)  
   *vagans*, 12-248 (B)  
   *varipes*, 18-252 (B)  
   *victoriæ*, 5-196 (B)  
   *victoriensis*, 12-245  
   *whittonensis*, 12-247 (B)  
   *yarrensis*, 18-253 (B)  
*Seirotiana dispar*, 55-542 (N)  
   *major*, 12-228 (B)  
   Sent as *Adelium major*  
     *monticola*, 55-541 (B)  
     *simplex*, 55-540 (B)  
*Seleurus fernshawensis*, 27-115 (B)  
   *sydneyanus*, 12-221 (B)  
   *variegatus*, 12-220 (B)  
*Semanopteris angustatus*, 4-232 (B)  
   *carinatus*, 17-43 (B)  
   *concentricus*, 20-251 (B)  
   *dentatus*, 17-43 (B)  
   *distributus*, 20-252 (B)  
   *longicollis*, 47-1412 (B)  
   *meridianus*, 20-250 (B)  
   *minor*, 4-233 (B)  
   *persimilis*, 17-42 (B)  
   *rectangulus*, 17-41 (B)  
   *tricotatus*, 20-252 (B)  
*Serangium*, 5-209  
   *bicolor*, 18-255 (B)  
   *hirtuosum*, 11-73 (B)  
   *maculigerum*, 11-73 (B)  
   *mysticum*, 5-210 (B)  
<sup>16</sup> *Sericosthis dispar*, 66-549 (B)  
   <sup>16</sup> *erosa*, 66-551 (B male, S female)  
   <sup>17</sup> *micans*, 66-546 (B)  
   <sup>16</sup> *parallela*, 66-545 (B)  
   <sup>16</sup> *parvipes*, 66-549 (B)  
   <sup>17</sup> *planiceps*, 66-547 (B)  
   <sup>16</sup> *puncticollis*, 66-551 (B male, S female)  
*Silis australis*, 55-530  
   Name altered to *Ananea boisduvalii* and so sent to the British Museum  
*Silphidæ*, 9-86, 11-25, 15-139, 31-288, 32-94  
*Silphomorpha boops*, 46-807 (B)  
   *cordifer*, 60-86 (B)  
   *difficilis*, 28-17 (B)  
   *rufoguttata*, 14-295 (B)  
   *spretæ*, 46-805 (S)  
*Silvanus aridulus*, 32-151 (B)  
   *armatulus*, 9-118 (B)  
   *monticola*, 9-118 (B)  
*Simodontus murrayensis*, 49-737 (B)  
<sup>16</sup> These species sent under *Scitula*.  
<sup>17</sup> These under *Anodontonyx*

- Sisyrium fraterum*, 11-58 (B)  
*laevigatum*, 11-80 (N)  
*sparsum*, 11-60 (B)  
*ventrale*, 11-59 (B)  
*vittatum*, 11-58 (B)  
*Solenia cowleyi*, 19-88 (B)  
*Soronia simulans*, 9-105 (B)  
*Sparactus costatus*, 9-117  
 No specimen marked as type in collection, but a named specimen marked as a synonym of *productus*, *Reitteri*  
*elongatus*, 9-116 (B)  
*proximus*, 9-116 (B)  
*pustulosus*, 9-116 (B)  
*Sphaeroderma baldiensis*, 19-77 (B)  
*Sphyrocallus bicolor*, 35-277 (B)  
*Spilopyra olliffi*, 55-544 (B)  
*Staphylinidae*, 1-13, 2-45, 3-66, 4-190, 9-68, 10-292, 11-21, 16-203, 18-202, 25-22, 30-16, 31-288, 32-93, 43-3, 54-788, 60-91, 78-262  
*Stenotarsus arithmeticus*, 18-233 (B)  
*commodus*, 18-233 (B)  
*Stenus australicus*, 54-788 (B)  
*Sternolophus caeruleus*, 53-555 (B)  
*tenebricosus*, 46-813 (S)  
*Stethaspis monticola*, 41-180 (B)  
*sternalis*, 42-48 (B)  
*Stethomela caudata*, 12-237 (B)  
*Stigmatium bimaculatum*, 22-91 (B)  
*Stigmodera arborifera*, 11-51 (S)  
*campestris*, 21-31 (B)  
*canaliculata*, 11-51 (N)  
*capucina*, 12-218 (N)  
*cara*, 12-216 (B)  
*caroli*, 15-141 (B)  
*carpentariae*, 11-53 (N)  
*cincta*, 8-157 (Sub. B)  
*dawsonensis*, 8-155 (B)  
*dispar*, 11-50 (N)  
*dulcis*, 26-41 (Sub)  
*elderi*, 44-36 (S)  
*equina*, 11-48 (B)  
*eremita*, 8-153 (B)  
*erubescens*, 28-23  
*filiformis*, 12-217 (N)  
*frenchi*, 8-150  
*guttata*, 8-158 (B)  
*guttaticollis*, 8-157 (B)  
*guttigera*, 28-24 (B)  
*hostilis*, 11-46 (B)  
*ignea*, 12-219 (B)  
*insignicollis*, 26-45  
*insignis*, 12-217 (N)  
*insularis*, 21-30 (N)  
*jubata*, 8-150 (N)  
*karattae*, 8-149 (S)  
*kerremansi*, 8-147 (Sub)  
*longula*, 11-54 (N)  
*macleayi*, 11-48 (N)  
*magnifica*, 19-35 (N)  
*marcida*, 11-52 (N)  
*marmorea*, 8-148 (S)  
*minuta*, 11-45 (B)  
*Stigmodera oleata*, 15-142 (B)  
*ornata*, 11-53 (N)  
*pallas*, 28-22 (B)  
*pallidipennis*, 8-154 (B)  
*pictipes*, 15-140 (B)  
*princeps*, 9-137 (N)  
*pulchripes*, 21-31 (B)  
*quadrinotata*, 11-49 (N)  
*rectipennis*, 9-138  
*regia*, 12-218 (N)  
*rubriventris*, 26-46 (B)  
*septemmaculata*, 11-45 (S)  
*skusei*, 11-46  
 Type in Australian Museum  
*sternalis*, 11-47 (N)  
*stillata*, 8-148 (Sub)  
*subgrata*, 26-41 (Sub)  
*subpura*, 33-307 (B)  
*terrae-reginae*, 14-295 (N)  
*tyrrhena*, 33-307 (B)  
*victoriensis*, 8-152 (B)  
*wimmerae*, 8-151 (N)  
*Streneoderma*, 27-157  
*contemptum*, 27-158 (B)  
*planatum*, 27-157 (B)  
*Strigoptera australis*, 55-501 (B)  
*frenchi*, 55-500 (N)  
*marmorata*, 55-501 (B)  
*Strongylurus minor*, 58-199 (N)  
*Styrus clathratus*, 53-573 (B)  
*Sunius aequalis*, 43-9 (B)  
*Sutrea mastersi*, 19-68 (B)  
*speciosa*, 19-69 (B)  
*Sybra mastersi*, 15-168 (B)  
*Syllitus heros*, 76-231 (B)  
*microps*, 76-232 (B)  
*uniformis*, 45-197 (B)  
*Symbothinus*, 53-582  
*nasutus*, 15-151 (B)  
*puer*, 14-302 (B)  
*squalidus*, 53-583 (B)  
*Symphyletes compos*, 31-319 (B)  
*dentipes*, 58-202 (B)  
*deserti*, 78-301 (B)  
*fasciatus*, 28-39 (B)  
*fraserensis*, 45-198 (S)  
*lentus*, 28-38 (B)  
*modestus*, 8-131 (B)  
*Syzeton laetus*, 10-337 (B)  
*lateralis*, 10-338 (B)  
*Syzetonellus*, 10-340  
*alpicola*, 10-340 (B)  
*Syzetoninus*, 10-339  
*inconspicuus*, 10-330 (B)  
*mundus*, 10-339 (B)  
*Tachinus novitius*, 9-68 (B)  
*Tachys adelaidae*, 2-40 (B)  
*baldiensis*, 54-782 (B)  
*brightensis*, 54-785 (B)  
*captus*, 2-42 (B)  
*findersi*, 2-41 (B)  
*infuscatu*, 2-38 (B)  
*lindi*, 2-39 (B)  
*ovensensis*, 54-784 (B)  
*semistriatus*, 2-41 (B)  
*similis*, 2-39 (B)

- Tachys uniformis*, 2-40 (B)  
*yarrensis*, 11-20 (B)  
*Talaurinus imitator*, 78-290 (B)  
*inaequalis*, 78-289 (B)  
*rufipes*, 78-290 (B)  
*strangulatus*, 17-56 (B)  
*Taromorpha*, 60-85  
*alternata*, 60-85 (B)  
*Tarsotenodes*, 27-139  
*simulator*, 27-139 (B)  
*Teinogenys inermis*, 53-561 (B)  
*Teispes frenchi*, 12-234 (B)  
*Telenica subfasciata*, 59-261 (B)  
*Telephorus andersoni*, 4-261 (B)  
*fusicornis*, 55-529 (B)  
*galeatus*, 55-529 (B)  
*palmerstoni*, 47-1424 (S)  
*pauvillus*, 4-261 (B)  
*proprius*, 4-260 (B)  
*tepperi*, 47-1424 (S)  
*vibex*, 4-261 (B)  
*victoriensis*, 55-528 (B)  
*Telmatoophilus breviformis*, 18-218 (B)  
*cairnsensis*, 18-217 (B)  
*koebelei*, 18-217 (B)  
*sharpi*, 18-216 (B)  
*singularis*, 18-218 (B)  
*stygius*, 18-218 (B)  
*sublautus*, 32-158 (B)  
*Temnopalpus*, 4-283  
*bicolor*, 4-283 (B)  
*Temnoplectron diversicolle*, 16-204 (B)  
*Tenebrionidae*, 4-269, 6-140, 7-91, 9-139,  
12-224, 13-132, 14-297, 16-210,  
17-51, 19-36, 21-34, 22-93,  
25-35, 26-59, 27-140, 28-25,  
31-319, 33-308, 37-286, 44-39,  
46-863, 47-1430, 50-1266, 51-153,  
52-309, 43-564, 55-533, 57-300,  
59-252, 60-101, 78-273  
*Tentegia parva*, 78-299 (B)  
*spenceri*, 78-298 (B)  
*Teretriosoma gradile*, 32-110 (B)  
*sorellense*, 32-111 (B)  
*Teretrius doddi*, 32-109 (B)  
*Terillus carinatus*, 47-1476 (S)  
*micans*, 47-1475 (B)  
*politus*, 47-1476 (B)  
*suturalis*, 48-461 (B)  
*Tessaromma nanum*, 25-93 (B)  
*Tetracha helmsi*, 44-16 (S)  
*Tetralobus thoracicus*, 52-309 (N)  
*Tetrigus australicus*, 19-35 (B)  
*Thallis dentipes*, 18-231 (B)  
*femoralis*, 18-230 (B)  
*macleayi*, 18-228 (B)  
*perplexa*, 18-228 (B)  
*subvinula*, 18-229 (B)  
*venustula*, 18-229 (B)  
*Thalycrodes*, 9-110  
*cylindricum*, 9-112 (B)  
*pulchrum*, 9-111 (B)  
*tenebrosum*, 9-111 (B)  
Var. of *australe*, *Germ*  
*Thanasimomorpha*, 10-304  
*intricata*, 10-304 (B)  
*Themelia*, 15-159  
*inconspicua*, 15-160 (B)  
*Thenarctes australis*, 4-184 (B)  
*discoidalis*, 4-184 (B)  
*metallicus*, 4-185 (B)  
sent as *Notophilus metallicus*  
*minor*, 4-185, 29-115 (B)  
*nigricornis*, 54-780 (B)  
*Thoris mœrens*, 76-229 (B)  
*septemguttata*, 76-228 (B)  
*Thyregis*, 77-145  
*kershawi*, 77-146 (B)  
*Timareta concolor*, 59-264 (B)  
*lineata*, 59-263 (B)  
*munda*, 59-264 (B)  
*pusilla*, 59-265 (B)  
*subfasciata*, 59-266 (B)  
*Titinia bicolor*, 56-120 (B)  
*brevicollis*, 56-118 (B)  
*cremita*, 56-119 (B)  
*læta*, 56-119 (B)  
*Todina lateralis*, 32-118 (B)  
*Tomvris ænea*, 48-471 (B)  
*antennata*, 48-472 (B)  
*difficilis*, 48-473 (B)  
*gracilis*, 48-468 (B)  
*impressicollis*, 48-469 (B)  
*læta*, 48-468 (B)  
*longicornis*, 48-470 (B)  
*minor*, 48-475 (B)  
*negligens*, 48-466 (B)  
*obscura*, 48-467 (B)  
*paradoxa*, 48-473 (B)  
*rasa*, 48-465 (B)  
*Toxicum addendum*, 47-1431 (S)  
*curvicorne*, 4-276 (B)  
*sprotum*, 4-276 (S)  
*Trechodes*, 29-119  
*gibbipennis*, 29-119 (B)  
*Trechus baldiensis*, 60-88 (B)  
*simsoni*, 60-90 (B)  
*solidior*, 29-118 (B)  
*subornatellus*, 29-117 (B)  
*tasmaniae*, 29-118 (B)  
*victoriae*, 60-89 (B)  
*Trichalus funereus*, 26-51 (B)  
*Trichananea*, 10-341  
*victoriensis*, 10-341 (B)  
*Trichelasmus basalis*, 37-236 (B)  
*Trichocarenum*, 44-20  
*elderi*, 44-21 (S)  
*Trichorcus*, 11-73  
*cinctus*, 11-73 (B)  
*Trichosalpingus*, 10-332  
*brunneus*, 10-333 (B)  
*obscurus*, 13-134 (B)  
*Trichosaragus*, 50-1269  
*pilosellus*, 50-1271 (S)  
*Trigonothops lindensis*, 56-66  
Var. of *pacifica*  
*occidentalis*, 56-66 (B)  
*Triphyllus intricatus*, 9-123 (B)  
*Tristaria labralis*, 11-30 (B)  
*Trogoderma adelaidæ*, 9-125 (B)  
*alpicola*, 9-124 (B)  
*antipodum*, 9-128 (B)

- Trigoderma baldiense*, 9-127 (B)  
*debilius*, 32-164 (B)  
*difficile*, 9-126 (B)  
*exsul*, 32-164 (B)  
*eyrense*, 9-124 (B)  
*froggatti*, 11-34 (B)  
*lindense*, 9-125 (B)  
*longius*, 32-165 (B)  
*macleayi*, 9-126 (B)  
*maurulum*, 32-165 (B)  
*meyricki*, 9-128 (B)  
*occidentale*, 9-127 (B)  
*reitteri*, 12-207 (B)  
*singulare*, 9-128 (B)  
*tolarensis*, 32-163 (B)  
*varipes*, 12-208 (B)  
*yorkense*, 9-127 (B)  
*Trogophlæus paludicola*, 2-49 (B)  
*Trogositidæ*, 9-112, 31-311  
*Tropideres evanescens*, 27-150 (B)  
*Trox augustæ*, 11-39 (B)  
*elderi*, 11-37 (B)  
 Sent as *Megalotrox elderi*  
*eremita*, 11-38 (B)  
*eulensis*, 11-39 (B)  
*eyrensis*, 34-293 (B)  
*insignicollis*, 78-265  
*mentitor*, 78-266 (B)  
*perhispidus*, 34-296 (B)  
*quadridens*, 11-38 (B)  
*setosipennis*, 34-292 (B)  
*strzeleckensis*, 17-33 (B)  
*tasmanicus*, 34-292 (B)  
 Sent as *Megalotrox tasmanicus*  
*tatei*, 34-291 (B)  
 Sent as *Megalotrox tatei*  
*tricolor*, 34-295 (B)  
*velutinus*, 11-40 (B)  
*Trypocharia frenchi*, 12-233 (B)  
*princeps*, 47-1460 (S)  
*punctipennis*, 47-1462 (B)  
*solida*, 58-194 (N)  
*uncinata*, 47-1461  
*Typhosecis adspersa*, 17-59 (B)  
*Uromoides*, 4-274  
*humeralis*, 4-274 (B)  
*Uracanthus acutus*, 48-451 (B)  
*froggatti*, 60-106 (B)  
*Volvulus punctatus*, 46-839 (B)  
*Xantholinus picticornis* (see *Leptacinus*)  
*Xanthophæa concinna*, 29-102 (B)  
*cylindricollis*, 29-103 (B)  
*filiformis*, 14-294  
*loweri*, 52-304 (B)  
*satelles*, 14-294 (B)  
*Xeda magistra*, 15-153 (B)  
*notabilis*, 15-153 (B)  
*Xenidia bizonata*, 19-43 (B)  
*melancholica*, 19-43 (B)  
*picticornis*, 19-42 (B)  
*Xuthea formosa*, 19-77 (B)  
*Xylopertha canina*, 13-131 (B)  
*hirticollis*, 22-92 (B)  
*mystica*, 50-1264 (B)  
*vidua*, 50-1265 (B)  
*Xylophilidæ*, 10-336, 16-219  
*Xynedria*, 58-185  
*interioris*, 58-186 (B)  
*Xynotropis*, 27-152  
*micans*, 27-152 (B)  
*Yorkeica*, 25-90  
*marmorata*, 25-90 (B)  
*Zietzia*, 16-205  
*geologa*, 16-206 (S)  
*Zonitis andersoni*, 6-142 (B)  
*aspericeps*, 25-69 (B)  
*brevicornis*, 6-143 (B)  
*carpentariae*, 25-68 (B)  
*cowleyi*, 25-65 (B)  
*gloriosa*, 6-147  
*helmsi*, 44-46 (S)  
*longipalpis*, 25-67 (S)  
*murrayi*, 6-146 (B)  
*queenslandica*, 25-66 (B)  
*rustica*, 6-145 (B)  
*subrugata*, 25-66 (B)  
*yorkensis*, 25-68 (B)  
*Zygocera concinna*, 28-36 (B)  
*Zymaus inconspicuus*, 47-1446 (B)

Mr. Blackburn had also some types of Chrysomelidæ named by Chapuis, and these were sent to the British Museum. Following is a list of same, according to a list received from that institution:—*Cadmus alternans*, *C. arrogans*, *C. lutatus*, *C. ornatus*, *C. purpurascens*, *C. sculptilis*, *C. strigillatus*, *C. trispilus*; *Cryptocephalus æger*, *C. argentatus*, *C. bihamatus*, *C. chrysomelinus*, *C. conjugatus*, *C. convexicollis*, *C. dichisus* (no doubt *dichrous*), *C. eumolpus*, *C. gracilior*, *C. iridipennis*, *C. perlongus*; *Edusa suturalis*; *Loxopleurus æneolus*, *L. corruscus*, *L. daemoniacus*, *L. pauxillus*; *Neocles sulcicollis*; *Paropsis irrorata*, *P. populosa*.

## THE IONIZATION PRODUCED BY THE IMPACT OF SOLID BODIES IN AIR.

By KERR GRANT, M.Sc., and G. E. M. JAUNCEY, B.Sc.

[Read April 11, 1912.]

### INTRODUCTION.

This paper contains an account of experimental investigations made by the authors on the phenomenon of the ionization which accompanies the impact of solid bodies in air.

The magnitude of the effect and of the total charge on the air, and the dependence of these magnitudes upon the nature of the surfaces of the impinging bodies and upon the energy of impact, as well as the character of the ions produced, have been more or less fully determined.

Two different methods of investigation have been employed, impact being produced in the one by a rifle bullet striking a metal target, and in the other by allowing a stream of shot or similar material to fall upon a plate.

The paper is divided into three sections:—The first containing a brief historical review; the second a description of the methods and results of the experiments; the third a brief summary and discussion of the results. The second section is divided into two subdivisions—the first relating to experiments made with the air-gun, the second to those made with the stream of falling shot or beads.

### I. HISTORICAL REVIEW.

In 1892 Lenard discovered that the air at the foot of a waterfall was powerfully electrified, and showed by experiment that this was due to the splashing of the water on the rocks and consequent rupture of the water surface.

This effect and other allied phenomena have since been studied in detail by many observers and shown to occur with many different liquids and solutions; but so far as we can find the corresponding effect for solids has not been observed, much less studied.

The first observations of this effect were made in September, 1910, for the case of a leaden bullet striking an iron target. The air in the vicinity of the target was examined in the usual way by means of an insulated electrode of brass wire connected to an electrometer, an electric field being



applied across the space between target and electrode. On impact of the bullet on the target the electrometer indicated the reception of a considerable charge, and this independently of the direction of the field, showing that ions of both signs were present in the air between target and electrode.

In the earlier experiments a Winchester rifle was employed, but in order to avoid effects due to exploded gases accompanying the bullet the Winchester was discarded in favour of an air-rifle, with which no such parasitic effects could be detected.

The rifle was mounted with its muzzle at a distance of about 6 ft. from the target; it threw a leaden bullet weighing .96 gram, with a velocity of about 700 ft. per second.

The results of preliminary qualitative experiments were stated in a paper read by one of us<sup>(1)</sup> before the Australasian Association for the Advancement of Science at Sydney, January, 1911.

## II.A. METHODS AND RESULTS OF EXPERIMENTS WITH AIR-RIFLE.

The method of investigation employed in the first instance, *i.e.*, when the ions are produced by the impact of a bullet on a target, will be understood best by reference to the accompanying diagram (fig. 1). The bullet fired from the air-gun perforates a thin sheet of paper, *LN*, and impinges upon the target, *P*, the nature of which can be varied at will. An annular metal electrode, *AB*, is supported in front of the target at a distance from it of about 1.5 cm. and insulated as shown with sulphur and guard-ring. Target and electrode are enclosed in hollow metal box, the lid, *CD*, of which is removable. This box with the target can be raised to any desired potential by means of a battery of 500 small accumulators and the charge driven on to the electrode measured by a Dolezalek electrometer of suitably arranged sensibility.

In making measurements of the total ionization the electrometer reading (mean of two or three successive swings) was taken 15 seconds after impact of the bullet, in which time practically all ions of a given sign produced in the chamber were found to be collected. A number of measurements (usually five or six) were made in each experiment and the arithmetic mean of these taken. The amount of variation in the effect is indicated by the mean error of these measurements. Where necessary, correction was made for the natural leak of the instrument. The order

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(1) Notes on Ionization by Impact, by Kerr Grant. M.Sc.

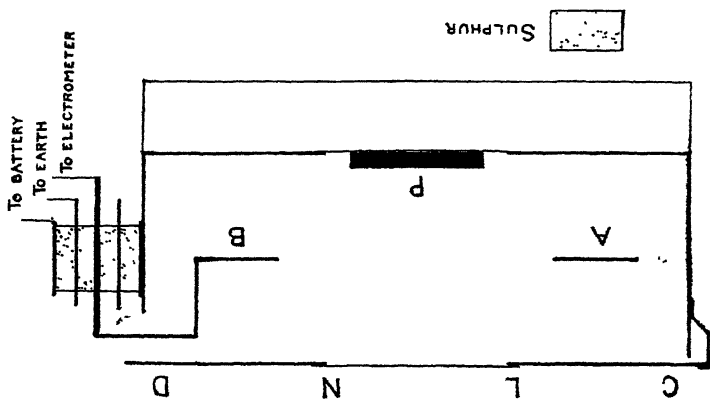


Fig. 1

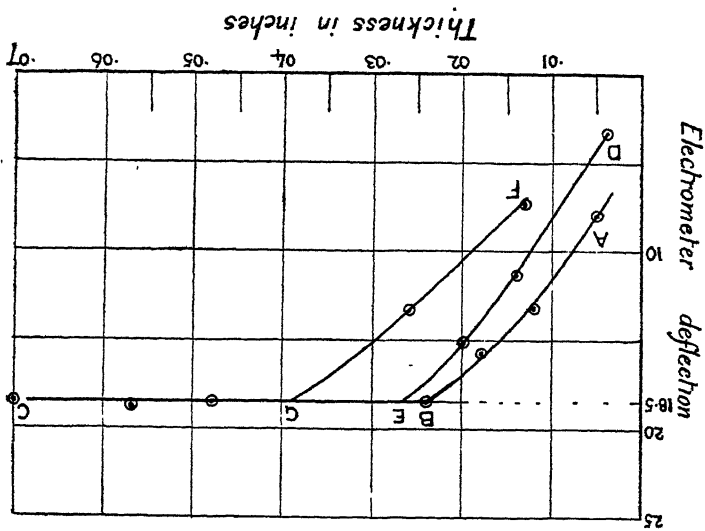


Fig. 2

of magnitude of the effect when a 1-gram bullet strikes a metal target with a velocity of about 700 ft. per second is six E.S. units, and approximately the same for *+ve* and *-ve* ions, *i.e.*, one E.S. unit per  $3 \times 10^7$  ergs of kinetic energy destroyed. Little variation was produced by varying the material of the target so long as this is of metal. This is shown by the following table of measurements:—

Material of Target.		Reading.
Lead	(A)	$16 \pm 3$
"	(B)	$69 \pm 4$
Iron	(A)	$35 \pm 3$
"	(B)	$60 \pm 3$
Zinc	(A)	$36 \pm 3$
Copper	(A)	34
Brass	(B)	63

Two sets of observations (A) and (B) are tabulated, the sensibility of the electrometer being higher in the latter set. The lead target used in (A) had been battered by previous usage, that in (B) was a fresh plate. This is the probable cause of the anomalous behaviour of the lead in the first case. When a wooden target was used the deflection of the electrometer needle was very much smaller than in the above cases.

In the above cases the target was not perforated by the bullet. When targets of lead-foil or sheet-lead were used the effect was found to vary with the thickness of the target, increasing with the thickness, but reaching a certain maximum value, while the target was still easily perforable. This is exhibited in the curve, *ABC*, shown in fig. 2. Other metals were found to behave similarly as shown in the curve, *DEC*, given for sheet-copper, the maximum ionization being the same in all cases, but the critical thickness decreasing with increasing density of the metal. The curve, *FGC*, is for sheet-zinc.

When the bullet perforates a target of sheet-metal the air in front of the target is found to be ionized, but practically no ionization could be detected in the air behind the target. For example, with the electrode and chamber in front a reading of 34 scale divs. was obtained, whereas the reading when both were transferred to the rear was only 0.32 scale divs.

If two perforable targets were placed in series the total ionization was found to be equal to the sum of the ionizations produced by each separately, provided the front target is not allowed to act as an electrostatic shield to the rear one.

FIG. 3

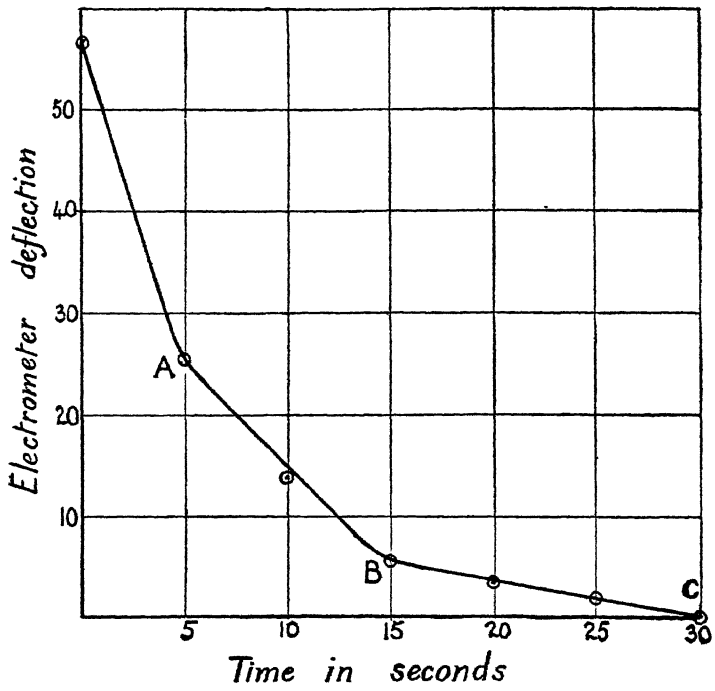
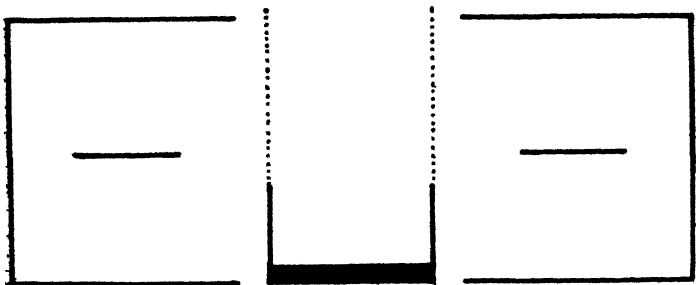


FIG. 4



Cleaning the surface of the target produced little if any difference in the magnitude of the effect; neither was any variation observed when a light target was backed by a heavy metal plate.

The mobility of the ions was roughly determined by a modification of Langevin's method (J. J. Thomson, *Conduction of Electricity through Gases*, 2nd Ed., p. 64). The distance of electrode from target was 1.9 cm. and the P.D. 600 volts. The curve showing the number of ions collected when the electrometer circuit was closed at different intervals after impact of the bullet is shown in fig. 3. This curve, for  $-ve$  ions, shows three tolerably distinct kinks at *A*, *B*, *C*, due to species of ions having mobilities  $2 \times 10^{-4}$  cm./sec. per volt/cm.,  $4 \times 10^{-4}$  cm./sec. per volt/cm., and  $1.2 \times 10^{-3}$  cm./sec. per volt/cm. The coefficient of recombination was found to be of the mean value 38  $\epsilon$ .

The dependence of the ionization produced on the velocity of the bullet was investigated by allowing the bullet to impinge after penetrating varying thicknesses of lead-foil, in doing which its velocity was, of course, reduced. The velocity was measured by the ballistic method. The following table exhibits the results:—

Velocity.	Ionization.	$V^2$	$\frac{V^2}{I}$	$\frac{V}{I}$
			I	I
126	33	16013	485	382
106	26	11293	434	408
96	17	9271	545	565
69	11	4888	444	627

The amount of ionization is seen to be, within the limits of experimental error, proportional to the square of velocity of impact, *i.e.*, to the energy of impact.

It was also sought to discover whether any radiations of a penetrating character akin to  $\beta$  or  $\gamma$  radiations from radioactive substances were associated with the impact of the bullet. To test for this effect the target was separated from the ionization chamber by a cylinder made of metal near the target and of wire-gauze covered with thin tissue-paper farther away (see fig. 4) to prevent any ions produced at the target from reaching the electrode. Under these conditions the charge received by the electrometer was so nearly equal to the natural leak that the existence of an ionizing radiation is made very improbable. Thus, with paper removed from wire-gauze the mean electrometer reading was 240, with paper covering gauze the reading was only 1.8, the natural leak being of the same order as this last.

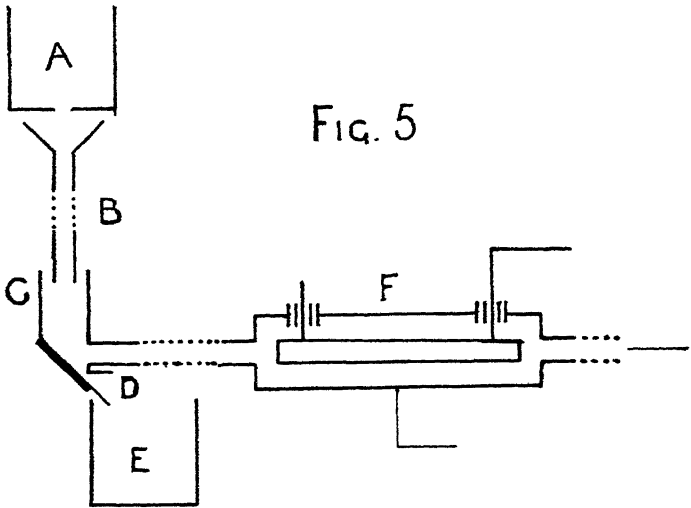
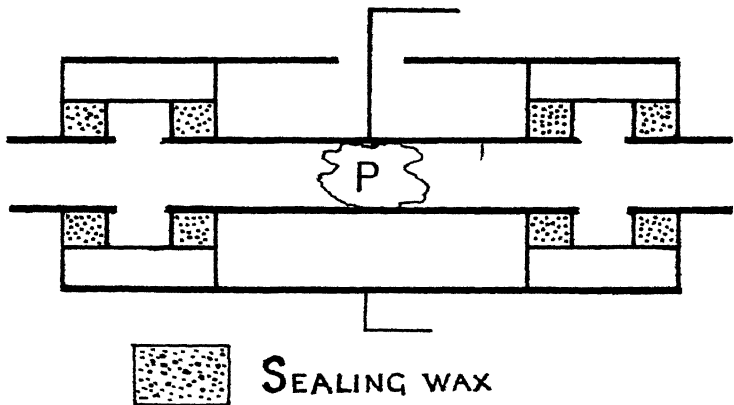


FIG. 5A



## II.B. METHODS AND RESULTS OF EXPERIMENTS WITH STREAM OF FALLING SHOT OR BEADS.

In all the above experiments the bullet was of lead. Attempts to make bullets for the air-rifle of other material were not successful, and since it was desirable to investigate fully the influence of the nature of the impinging material other methods of producing the effect were sought. After tentative experiments by firing an arrow tipped with different materials and dropping bodies from a height upon a plate, in all of which a slight ionization in the immediate vicinity of the target was detectable, we were finally led to the construction of the apparatus sketched in fig. 5, by means of which a steady stream of shot or similar material was allowed to fall upon a solid plate. A steady stream of air drawn over the plate could then be examined, and was found to contain, under given conditions, a remarkably constant number of ions. The order of magnitude of the effect in the case of lead shot was such that one E.S. unit of charge was collected per  $3 \times 10^8$  ergs of kinetic energy destroyed. This, however, can be regarded only as a very rough approximation, owing to the difficulty of getting a sufficiently rapid current of air to prevent loss by recombination and for other obvious reasons.

The shot is contained in a copper vessel, *A*, and falls freely, when a shutter covering the hole in its bottom is drawn aside, down a brass tube, *B*, from this into a wider tube, *C*, at the base of which is the target inclined at  $45^\circ$  to the horizontal. The shot by an aperture at *D* escapes into the vessel *E*. A current of air is drawn by means of a filter pump over the target and either through a Zeleny tube, *F*, or through a Faraday tube (fig. 5*A*), which serve respectively to measure the total ionization of a given sign or mobility of the ions and the total charge. The outline, *P*, in fig. 5*A* represents a plug of cotton wool. The height of the vessel, *A*, and the material of the target can be varied at will.

The first experiments with this apparatus were directed to a confirmation of the law that the ionization is proportional to the energy of impact, *i.e.*, in this case, to the height of fall. The accuracy with which this law holds for the impact of a stream of leaden shot on a brass target is shown by fig. 6.

The mobility of the ions was determined by Zeleny's method (J. J. Thomson, *Conduction of Electricity through Gases*, 2nd Ed., p. 58). The saturation curves for the positive and negative ions respectively are shown in fig. 7, *A* and *B*. The values of the mobilities when the abscissæ of the points *X* and *Y* were used in calculating were  $1.6 \times 10^{-3}$  cm./sec. per volt/cm. for both positive and negative ions, but the

FIG. 6

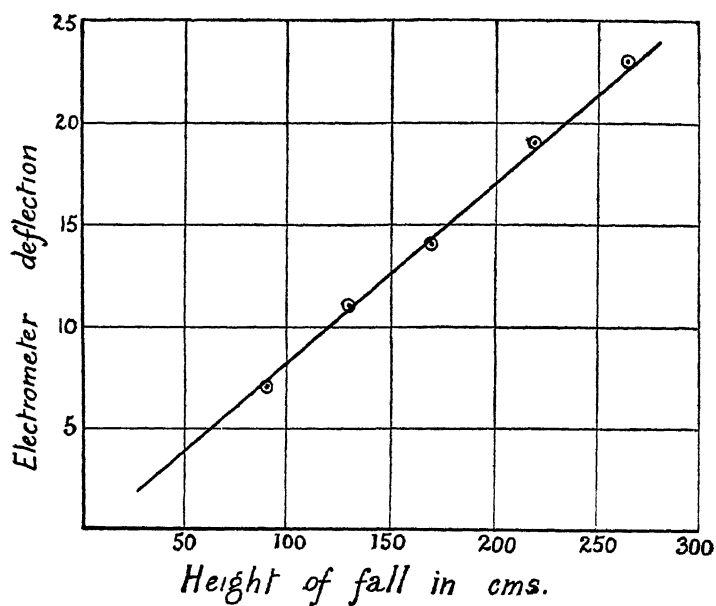
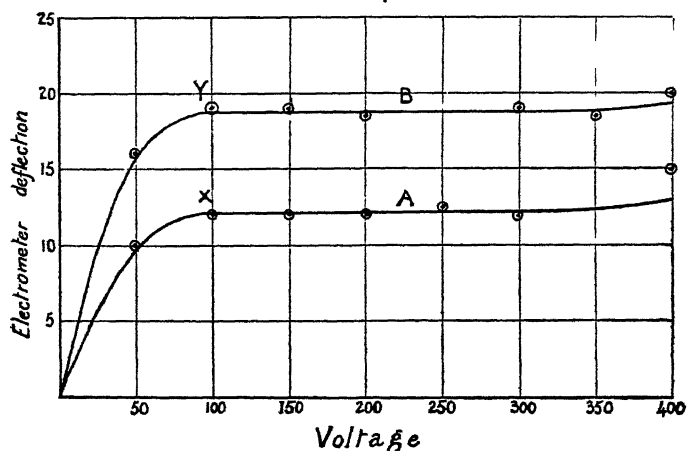


FIG 7





nature of the curves shows that they are produced by a mixture of ions of varying mobility, the mean mobilities, however, being the same for positive and negative ions.

No point of inflexion could be found in the mobility curves, even when the field reached a value of 400 volts/cm.

The shot used in these experiments and in the preceding weighed .0392 gm. per shot. When glass beads (diameter .036 in.) were substituted for the shot and allowed to fall through a glass tube on a glass target the saturation curves shown in fig. 8 were obtained. The character of these curves shows that the variety of ions is still greater than in the case of those produced by lead shot. Calculating for the points *P* and *Q* as the elbows of the curves the mobilities are found to be  $1.0 \times 10^{-3}$  for both positive and negative ions.

The sign of the total charge on the air drawn over the target was determined by drawing it through the Faraday tube. When lead shot fell upon a target of any metal the total charge on the air was small and of variable sign. On the other hand, when the shot fell upon an insulator (glass, ebonite, silk) the charge on the air was invariably positive. The following are typical measurements:—

Target.	Reading.
Brass	0 ± .2
Zinc	+ .2 ± .2
Ebonite	+ 1.1 ± .2
Glass	+ 6.9 ± .3
Silk	+ 10.0 (q.p.)

When glass beads are used the charge on the air is always negative:—

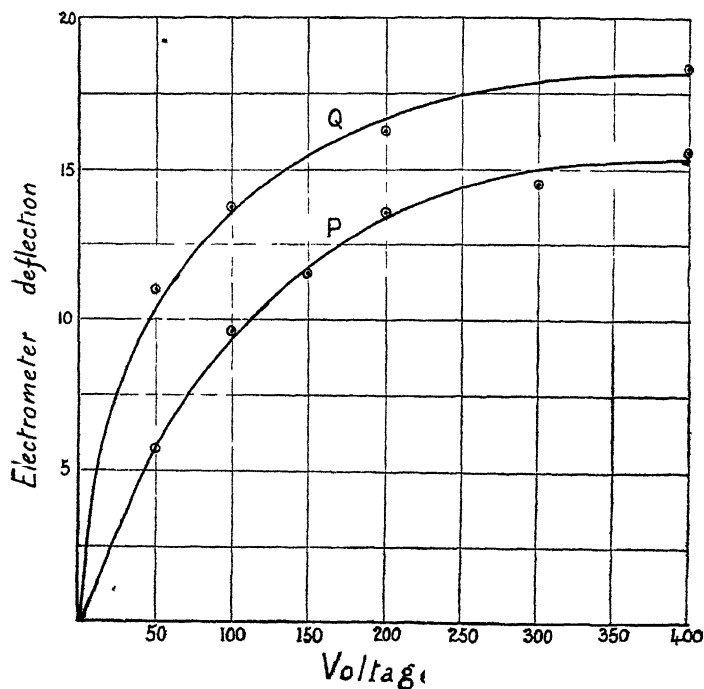
Target.	Reading.
Brass	—10.0 ± .1
Ebonite	— 8.1 ± .6
Glass	— 4.5
Silk	— 3.0

To test whether electrification incurred by the beads in touching the metal tube in their fall had any influence a glass tube was substituted for this, and was found to exert no important influence on the readings. The ionization produced in the process of falling through the fall-tubes was also measured, and found to be less than 10 per cent. of the total ionization.

In making experiments with the stream of lead shot falling upon a metal target it was observed that if unused shot were allowed to fall upon a new target (say, of brass) the

amount of ionization in the air drawn off was at first very large, but decreased at first rapidly and then more slowly as the shot continued to fall, asymptoting, apparently, to a definite minimum value. A typical set of readings exhibiting this "fatigue" effect is as follows:—7.0, 6.2, 5.2, 4.9, 4.3, 4.1, 4.0, 3.9, 3.7, 3.5. For this reason it was found impossible to compare satisfactorily the magnitude of the effect with targets of different metal and also with shot of different

FIG 8



diameters. When targets of glass or ebonite were employed the above effect was insignificant, a steady reading being obtained from the outset. Thus with a glass target the successive readings 1.9, 2.2, 2.2, 2.1 were obtained; with an ebonite one 3.1, 3.0, 3.05.

Ionization is likewise found to occur whatever substance be allowed to fall on the target, *e.g.*, with sugar, salt, caustic soda, etc., the effect with sugar being larger than for any other substance examined.

### III. SUMMARY AND DISCUSSION OF THE EXPERIMENTAL RESULTS.

The results of the experiments described above sufficiently establish—

- (1) That ionization is a general consequence of the collision of solid bodies in air.

The Lenard effect is thus produced both by solid and liquid bodies.

- (2) That for bodies of a given kind the amount of ionization is proportional to the energy of collision.
- (3) That the amount of ionization depends in general on the nature of the colliding bodies, or at least on the nature of their surfaces.

The constancy of the effect when a leaden bullet strikes a metal target is perhaps explicable on the assumption that the ions are formed mainly, if not entirely, at the surface of the lead, invariably the softer metal.

- (4) That the number of positive ions produced when two metallic bodies collide is equal to the number of negative, but when one of the bodies is an insulator the numbers are unequal.
- (5) That the ions formed are of very small mobility, comparable with that of the large ions in the air, those produced in the slow oxidation of phosphorus, the splashing of liquids, etc.
- (6) That the ions are produced mainly, if not entirely, at those portions of the surface of the bodies where contact takes place in collision.

The evidence for this last statement is to be found in the additive law for targets of thickness giving the maximum effect, when placed in series. Thus, if an ionization  $x$  be produced by a target of thickness  $a$ , and an ionization  $y$  for a target of thickness  $b$ , the bullet having already traversed a target of thickness  $a$  outside the chamber, then the total ionization due to both targets placed within the chamber is found to be  $x$  and  $y$ , whereas the effect due to a single target of thickness  $a$  and  $b$  is simply  $x$ . The "fatigue" effect exhibited when lead shot falls upon a metal target also finds ready explanation on the assumption that the ionization is a surface effect.

- (7) When a leaden bullet perforates a metal target the ionization increases with thickness of target up to a certain maximum, after which increasing the target, even to the point at which the bullet no longer pierces it, produces no further effect.

The explanation of this fact may possibly be found in the existence of an electrical double layer on the surface of target or bullet, from which the ions are set free in proportion to the energy lost by the bullet on striking the surface. Thus, the number of ions formed will increase with the amount of kinetic energy destroyed up to the point at which the "double layer" in region of impact is entirely disintegrated. If this explanation hold, however, it is obvious that a critical velocity should also exist above which no further variation of ionization with velocity should occur. No evidence of such a limit was obtained with the speeds employed.

In the present state of ignorance with regard to the causes and mechanism of ionization in general, no complete explanation can be offered of the above results. The cause is no doubt to be sought in the destruction of kinetic energy at the moment of impact, and the transformation of this energy into energy of intra-molecular vibration. It may plausibly be assumed that the internal energy of a certain number of molecules would be increased to the limit at which instability and consequent ionization result.

It is more difficult, perhaps, to offer even a general explanation of the inequality in number of the positive and negative ions which occurs when one or both of the bodies is an insulator. Such an inequality might naturally be connected with the existence of an electric field, due to the electrification of the colliding bodies; but the fact that the total charge in the air when glass beads fall upon a target of any material, whether this latter be electro-positive or electro-negative to glass, is invariably negative, renders this mode of explanation improbable. The same inequality has, of course, been observed in the Lenard effect, and the same explanation will probably cover both cases.

It may be suggested, in conclusion, that this effect plays a part in certain other phenomena, *e.g.*, in the luminescence of meteoric swarms, such as Saturn's rings, and possibly in tribo-luminescence. An attempt was made to reproduce the well-known luminescence of a vacuum tube containing mercury by substituting glass beads. This was unsuccessful.

Nevertheless, the apparent ease with which bodies electrify by friction in high vacua may be associated with the absence of such ionization as we have investigated above.

# ON AN OUTLIER OF OLDER CAINOZOIC ROCKS IN THE RIVER LIGHT NEAR MALLALA.

By WALTER HOWCHIN, F.G.S., Lecturer in Geology and  
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[Read April 11, 1912.]

## PLATE I.

The distribution of the older Cainozoic rocks in South Australia is such as to suggest that, at one time, there was a continuous sheet of these beds over the maritime districts, including much of the highlands, and extending inland to an unknown distance. The occurrence of these marine fossiliferous rocks in their present positions give proof of a former lower level of the land which allowed an epicontinental extension of the sea margins. They also tell of a subsequent elevation of the land, including the submerged continental shelf, amounting to many hundreds of feet, which made of South Australia an upland plateau. These elevatory movements exposed the marine sediments to severe weathering and erosion, by which they have been entirely denuded from large areas that they once occupied.

It is only in the extreme western and eastern sides of the southern portion of South Australia that the older Cainozoic rocks have been preserved in extensive sheets—the one occupying the head of the Great Australian Bight and extending inland for a distance of, at least, 150 miles; the other includes the Murray Plains (extending northwards into New South Wales) and the South-East to the Victorian borders. Between these extreme localities, where the main outcrops occur, crust movements of great importance have transpired, which have broken up and removed the greater part of the beds referred to, leaving only isolated fragments as outliers of the main formation, some of which are so small that they would not yield sufficient material to make a good quarry. Of these outlying fragments the following groups may be indicated:—

1. In southern Yorke Peninsula, resting on glacial clay of Permo-Carboniferous age:—Outcrops occur in the neighbourhood of Troubridge, on the south coast; along the south-eastern coast, from Edithburgh to near Black Point; Point Turton, Hardwicke Bay; and several inland patches.

2. In northern Yorke Peninsula:—On the western side, cliffs at Wallaroo Bay, also at Tickera Bay, and extending inland to Boor's Plains. On the eastern side there is a small capping resting on older rocks at Ardrossan, and outcrops occur, mostly in cultivated fields, around Kulpara.

3. Small occurrences on Kangaroo Island:—Along the shore at Queenscliffe; resting on granite at Cape Willoughby; and a small outlier, inland from Smith Bay, on the north coast.

4. On the eastern side of Gulf St. Vincent.—A high-level patch on the Hindmarsh Tiers; and another, at much lower level, at the railway bridge over the Finnis, on the eastern side of the ranges; a narrow fringe on the coast of Gulf St. Vincent, near Sellick's Hill; on ploughed land on Mr. Oliver's farm near Bellevue; along the sea cliffs at Port Willunga, and at Port Noarlunga; the beds have been proved in several well-sinkings, near Paradise, in the Torrens valley, as well as in the Kent Town bore: at a high level above Gawler; and in the deep bore at Croydon on the Adelaide Plains.

The small outcrop which forms the subject of the present paper was discovered in an unexpected situation, in the middle of the Adelaide Plains, where there is usually a great thickness of alluvium of recent age. It is also interesting from the fact that it is the most northerly exposure of these beds, at present known, on the eastern side of Gulf St. Vincent.

The River Light is a juvenile river that pursues an erratic course, first, as a longitudinal stream taking its rise near Waterloo, and flowing north and south; it subsequently takes an easterly direction but, instead of finding its way to the Murray flats, it suddenly turns and takes a westerly course, cutting through the low ranges, transversely, and loses itself on the plains. In its upper portions the river flows over an old Cambrian peneplain, consisting mainly of rotten aluminous rocks, which are well seen at Hamley Bridge. At a distance of about five miles below Hamley Bridge the river ceases to have a rocky bed and enters on the maritime plains, which, as flood plains of great extent, owe their existence to an antecedent system of drainage entirely distinct from the present. Here it has cut for itself a passage through alluvial deposits, which, in places, form steep and high banks: the flow of water becomes sensibly diminished after leaving the rocky portion of its course, and, in summer, the lower portions of the river are either dry or

contain only a few small stagnant pools at distant intervals. The river fails to reach the sea, becoming lost in the absorbent soil near the township of Lower Light.

The Red Banks, where the outlier of Lower Cainozoic rocks occurs, take their name from a series of large washouts on the left bank of the River Light (Section 5, Hundred of Grace), near the bridge on the main road to Mallala. At this point the river makes a remarkable bend to the south and then returns north by a course almost parallel with itself. The inside of the loop consists of alluvial deposits, somewhat lower than the normal banks, built up largely by flood waters. On the east side of the bend a few small and local streams (which only run when heavy rain occurs) have cut deeply into the banks by falling over the cliffs, and the latter have retreated, irregularly, from the river for nearly a quarter of a mile. The banks consist of red clay (which is sometimes white or mottled), loamy clay, sand, coarse grit to fine gravel. The walls are steep—in places perpendicular—and are undergoing rapid waste.

Between the river level and the top of the retreating clay banks there is an extensive platform, or middle terrace, rising slightly in level towards the head of the washout and, opening out inwards, the banks are arranged around this middle platform in amphitheatre form.

This middle platform, or terrace, owes its existence to a hard floor of Cainozoic limestone which underlies the alluvial cover, and has presented a greater resistance to the erosive action of the streams than the soft sediments. The following measurements were determined by aneroid:—From river level to limestone platform, 40 ft.; from top of limestone to highest point of adjacent cliffs, 40 ft.

A complete section of the beds is as follows:—

(a) Marly soil with nodules of surface travertine, 6 ft.

(b) Light-reddish-coloured clay loam, 14 ft.

(c) Dark-red and mottled clays and loam, 20 ft.

(d) Fossiliferous Cainozoic limestone (thickness not proved), 20 ft.

Near the head of the washout, the stratum (b) is replaced by light-coloured to reddish sand and fine gravel which occupy a gutter of erosion about 40 ft. in width. This gutter does not seem to pass down into stratum (c) and is covered unconformably by the superficial bed (a). It has no accordance with the present lines of drainage.

The chief point of geological interest in this section is the occurrence of the marine Cainozoic beds, which form the surface of much of the middle terrace towards its upper limits. These beds occupy the entire width of the washout, which is at this point 68 yards, and are seen to pass under the alluvial banks on either side. They are apparently horizontal, and form a small scarp near their upper limits (plate i.). A small creek on the northern side of this area makes a series of small waterfalls by flowing over ledges of the Cainozoic limestone. This creek gives a section of about 16 ft. of these beds, and as they crop out again at the surface, about half-way between the main exposure and the river, it may be estimated that the beds in question must be, at least, 20 ft. in thickness.

The beds, for the most part, are a fairly pure limestone, but they have been considerably leached, and from this cause the rock is open in texture and most of the gastropods, bivalves, and some other forms, are present only by casts and impressions. A thin siliceous layer proved to be exceptionally rich in its fossil contents.

The following palæontological determinations have been made:—

FORAMINIFERA (seen only in section by fracture):—  
*Miliolina*, sp.; *Nodosaria*, sp.

ACTINOZOA:—Cast of an *Aporose* coral.

ECHINODERMATA:—*Lovenia forbesi*, Duncan; *Monostychia australis*, Laube; *Fibularia gregata*, Tate; *Echinolampas posterocrassus*, Gregory.

POLYZOA:—*Retepora*, sp.

BRACHIOPODA:—*Magellania pectoralis*, Tate.

LAMELLIBRANCHIATA:—*Pecten hochstetteri*, Zittel; *Trigonia semiundulata*, McCoy; *Pectunculus convexus*, Tate; *Venus (Chione)*, sp.; *Dosima*, sp.; *Leda*, sp. (cast).

GASTROPODA:—*Ancillaria ligata*, Tate; *Turritella aldingæ*, Tate; *Conus*, sp. (cast); *Natica*, sp. (cast).

SCAPHOPODA:—*Dentalium*, sp. (cast).

The above list of fossils shows no peculiar features, the occurrences are such as are found in the contiguous outliers of the same age, at Aldinga, Adelaide, and Gawler. The Echinodermata are the most abundant of the forms present. *Pecten hochstetteri* is also very common. The siliceous band carries numerous examples of *Pectunculus*, *Chione*, *Trigonia*,



and *Leda*, while fragmentary Polyzoa make up the greater part of the finer material of the limestone.

To what extent these marine Cainozoic beds occur in the district is unknown, as the country is uniformly covered with alluvium of considerable thickness. There is reason to believe, however, that the small outcrop at the Red Banks forms part of an extended sheet of these beds existing in the neighbourhood, but hid from sight by the newer deposits. The extensive development of travertine limestone in the district favours this view. A few miles out from Wasleys railway station, on the road to the River Light, the ground becomes distinctly calcareous and nodules of travertine are thickly strewn over the cultivated land and are gathered up and used for road metal. In several places this surface limestone is sufficiently thick to be quarried. All the stone buildings of Mallala and neighbourhood are constructed of travertine limestone, the stone being obtained from local quarries. Whilst it is not maintained that the marine limestones are concurrent with this surface-travertine limestone throughout the district, the very considerable development of the latter, locally, can be best explained by assuming that the extensive leaching of the older limestone has yielded the greater part of the travertine, which is always a secondary product.

This small outlier of Lower Cainozoic rocks in the Light is of considerable interest as bearing on the ancient topography of the country, especially when studied in relation to other outliers of similar beds in adjacent districts. The nearest locality for rocks of the same age is at Gawler, situated about 15 miles in a direction south-easterly from the Red Banks. The two outcrops are, however, of distinctly different lithological types. In the case of the Gawler beds, the fossils occur in a coarse grit, while the beds at Red Banks, on the Light, are true limestones. Such strong contrasts must be referred to different conditions of deposition. The Gawler beds give evidence of strong currents, probably a shore-line, while the Red Banks deposits were laid down at some distance from the shore and in a position that was protected from land wash. The material obtained from the Kent Town and Croydon bores was fine-grained and strongly calcareous with a greater likeness to the Red Banks outcrop than to the Gawler.

The most interesting feature, however, is the remarkable discordance which these several outliers, although relatively adjacent, exhibit in relation to their respective elevations. In the Kent Town bore the Lower Cainozoic beds were proved, in their upper limits, at a depth from the surface of 127 ft.,

or 12 ft. above sea-level. At the Croydon bore, two and a half miles west of Adelaide, the upper limit of the same beds occurs at about 700 ft. below sea-level. At Gawler, they have an elevation of about 400 ft. above sea-level; and at the Red Banks (as determined by aneroid) they are about 230 ft. above sea-level.

This great discordance, within short geographical distances, can only be reasonably explained by the occurrence of step-faulting, probably more or less influenced by differential erosion of the beds. It has been demonstrated <sup>(1)</sup> that such step-faulting has occurred in localities, further south, since the period when the marine beds of this age were laid down, and it is highly probable that the effects of such earth-movements would be felt marginal to Gulf St. Vincent throughout its entire length.

The results of step-faulting would be to produce a series of distinct shelvings of the older rocks at different depths. It is believed that the Red Banks Cainozoics rest on such a shelf or platform of Cambrian rocks. That is the usual order in which the geological formations mentioned occur in this part of the country. Moreover, about a mile to the north of the Red Banks, the Cambrian slates outcrop in a small gully near the middle of Section 1, Hundred of Grace. This is the first evidence of Cambrian outcrops in the Lower Light, but about two and a half miles further up the valley, to the north-east, in Sections 151 and 153, strong outcrops of these rocks occur in the bed of the river and continue from this point to Hamley Bridge. I was informed by Mr. Marshman, of Mallala, that in a well-sinking near the Woolsheds Methodist Church, at the five cross-roads, about three miles out from Wasleys, the old "blue-rock" (Cambrian) was struck at a depth of 40 ft., and no water tapped.

It is therefore certain that each of the Cainozoic outliers, included within the Adelaide and Red Banks groups, rests on Cambrian steps or platforms. The highest of these steps is that which carries the Gawler fragment, at an elevation of about 400 ft., above present sea-level. The Red Banks platform is about 200 ft. above sea-level. The Kent Town bore proved the Cambrians at 221 ft. below sea-level; and at the Croydon bore at 2,206 ft. below sea-level. It is possible that the Cainozoic sea-floor was uneven originally, which might account for some differences of level, but can scarcely account for the extraordinary disparity, within short dis-

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(1) Howchin, Trans., Proc., and Rep. Roy. Soc., S.A., vol. xxxv., 1911, p. 47.

tances, amounting to about 2,600 ft. These facts are set forth in the following Table:—

LOCAL OUTLIER.	SURFACE LEVEL.	UPPER LIMITS OF EOCENE.		CAMBRIAN PLATFORM.	
		Above sea level. Feet.	Below sea level. Feet.	Above sea level. Feet.	Below sea level. Feet.
1. Gawler ...	415	400	—	360	—
2. Red Banks	270	230	—	210	—
3. Kent Town	139	12 <sup>(a)</sup>	—	—	221
4. Croydon ...	56	—	700	—	2,206
5. Dry Creek	16	—	(?)	—	(?)
6. Smithfield...	—	—	(?)	—	(?)

Bores have been put down at Dry Creek and Smithfield. In the first locality named, the bore penetrated to 410 ft., and at that depth touched the base of a Pliocene marine deposit. The same geological horizon was met with, at about the same depth, in the Smithfield bore, and also in the Croydon bore; and although the sinking at Dry Creek and Smithfield was not in either case carried down to bed-rock, it seems probable that these bores are within the deeply-sunken area revealed by the Croydon bore, and are shown in the above Table for comparison.

The chief points of interest in the observations now submitted are in extending the known area of the older Cainozoic sea limits, and also in the additional evidence it affords of the shelving-distribution of the remnants of these old marine deposits consequent on the sinking of the gulf area by successive steps.

My acknowledgments are due to Mr. T. Nevin, late head teacher of Mallala public school; Rev. C. E. Schäfer, and Mr. Marshman, for supplying interesting local information; and to Mr. R. E. Stanley, an undergraduate at the Adelaide University, for calling my attention to this outcrop.

#### DESCRIPTION OF PLATE I.

View of washout in Red Banks, River Light. The ledge on which the bag and hammer rest is the upper limit of the Cainozoic outcrop.

(2) When Tate described the Kent Town section he had not distinguished between the two lower marine series, but classed them all as "Miocene." Guided by the nature of the material I have assumed that, in Tate's section, the Miocene beds are included from Nos. 13 to 16; an interval of erosion is represented by No. 17, and the Eocene from Nos. 18 to 24. The upper limit of No. 18 is 12 ft. above sea-level.

## ADDITIONS TO THE FLORA OF SOUTH AUSTRALIA.

By J. M. BLACK.

[Read May 9, 1912.]

## PLATES II. AND III.

The subjoined list is mainly the result of botanical investigations carried out during the past year. The plants marked with an asterisk are aliens which have been found more or less well established in this State.

DILLENIACEÆ.—*Hibbertia sericea*, Benth., var. *nova major*.

Differt a formâ typicâ sepalis et foliis majoribus (illis 10-15 mm., his 15-20 mm. longis), necnon numero staminum (20-25) et ovulorum (8 in quoque carpello).

Near Port Lincoln (H. H. D. Griffith).—A stouter plant than the typical form, and larger in all its parts, the sepals densely villous with long silky hairs.

*Hibbertia acicularis*, F. v. M., var. *nova sessiliflora*. Floribus sessilibus, sepalis glabris, staminibus 4 rarius 6, carpellis pubescentibus 3-4-ovulatis.

Frequent in the Mount Lofty Ranges and often growing near *H. stricta*, R. Br. Mentioned in 1862 by Mueller in *Plants Indigenous to the Colony of Victoria*, i., 17, where, after describing *H. acicularis*, he wrote:—"On stony mountains at Glen Osmond, in the Bugle Ranges, and towards Mount Remarkable (within the colony of South Australia), occurs a closely allied species, of which the fruit is as yet unknown. It differs chiefly in higher erect growth and glabrous sepals." In *Fragmenta*, xi., *H. acicularis* with sessile flowers is mentioned as growing on the Loddon and at Stawell, as well as in South Australia, but the variety was not named by Mueller, as far as I know. This appears to be the only form of the species in South Australia. It is distinguished from *H. stricta* by its narrow, pungent-pointed leaves, glossy on the upper surface. As forms with both sessile and pedicellate flowers are admitted under *H. stricta* there seems no reason why the definition of *H. acicularis* should not be widened in the same way.

LINACEÆ.—\**Linum strictum*, L. Maitland, Yorke Peninsula (A. G. Edquist). "Grew on rubbish tip and is spreading over uncultivated land."—Mediterranean region.

**CISTACEÆ.**—\**Cistus hirsutus*, Lamk. Roadsides, Mount Lofty (H. H. D. Griffith).—Ornamental plant from the Mediterranean region.

**RUTACEÆ.**—*Asterolasia muricata*, sp. nova. Frutex humilis ramosus, ramulis stellato-pubescentibus, foliis breviter petiolatis late oblongis crassis rigidis 7-14 mm. longis superne tuberculato-muricatis glabris inferne concavis albo-tomentosis, floribus flavis subsessilibus solitariis axillaribus vel 1-3 terminalibus, calyce minuto, petalis induplicato-valvatis externe stellato-pilosis, staminibus 10, ovario tomentoso bilobato, stigmate magno emarginato.

Near Mount Thisbe, Kangaroo Island (H. H. D. Griffith, October, 1908). The only species of *Asterolasia* as yet found in South Australia. It belongs to Benthams section *Urocarpus* (*Fl. Aust.*, i., 352), all the other species of which are Western Australian. (Plate ii.)

**LEGUMINOSÆ.**—\**Uria gracilis*, Lois. Longwood. — Europe.

**NOTE.**—*Pultenaea graveolens*, Tate, has been found at Mount Remarkable (E. C. Black), leaves glabrous above and with margins much more revolute than in the specimens from the Mount Lofty Ranges. *P. trifida*, Black (*Trans. Roy. Soc., S.A.*, xxxiii, 224). This species is nearest to *P. densifolia*, F. v. M., which it resembles in the spreading leaves with recurved tips, but in *P. trifida* they are hairy, larger, distinctly mucronate, and without the prominent lateral nerves below: bracteoles trifid and flowers lighter in colour. The Tate Herbarium contains a specimen of *P. trifida* in leaf only, labelled "Mount Pleasant Station, 6/3/86."

**UMBELLIFERÆ.**—*Carum sioides*, sp. nova. Herba perennis aquatica glabra, rhizomate stolonifero, caule erecto sulcato fistuloso ramoso, foliis pinnatisectis inferioribus 8-10-jugatis, foliolis ovato-oblongis sessilibus æqualiter serratis base truncatis, foliis superioribus paucijugatis, foliolis inæqualiter inciso-dentatis, floribus albis, umbellis pedunculatis 8-12-radiatis oppositifoliis et terminalibus, involucri et involuelli bracteis 4-8 lineari-lanceolatis sæpius integris, calycis dentibus obsoletis, petalis albis emarginatis cum acumine inflexo, fructu parvulo subgloboso ( $1\frac{1}{2}$  mm. longo) a latere compresso ad commissuram constricto, mericarpii jugis angustis, vittis subpericarpio sitis solitariis latis totam valleculam occupantibus, carpophoro bipartito cruribus mericarpio plus minus adnato.

Growing in or close to running water at National Park, Belair, at Willunga, and beside North Para River, Nuriootpa.

In habit, carpophore, and petals this species might belong to *Sium*, but the absence of calyx-teeth and the solitary vittas are not characters of that genus. Specimens forwarded to two great botanical establishments have been determined variously as *Sium latifolium*, L., and *S. erectum*, Huds. (*S. angustifolium*, L.), evidently without examination of the fruit. In the *Naturalized Flora of S.A.*, p. 71, I described it under the name of *Sium latijugum*, Clarke. This is an Indian species, for whose inclusion in *Sium* Clarke altered one of the generic characters by making the furrows of the fruit univittate. Since then specimens have been sent from South Australia to Calcutta and carefully examined by the Director of the Royal Botanic Garden at Sibpur (Major Gage) and Mr. M. S. Ramaswami, who find that our plant differs from *S. latijugum* in the narrow slender ridges of the carpels and in the shape of the leaflets. They advise placing it in *Apium* and instance its resemblance to *A. nodiflorum*, Reichb. It seems to me, however, that the bipartite carpophore and the emarginate petals exclude it from that genus, and I have placed it in *Carum*, with which it agrees very fairly, especially when the generic character is extended so as to include *Petroselinum*, Hoffm. Although in our plant the branches of the carpophore usually remain united to the carpels and fall off with them, they are sometimes seen, in the ripe fruit, free from them for a considerable part of their length. It is only in specimens from Nuriootpa that I have found 1 or 2 pinnatifid bracts in the involucre, and of these specimens I have not been able to obtain fruits. The plant here described is very probably the *Sium latifolium*, L., mentioned in *Fl. Aust.*, iii., 336, as an introduction. There can be little doubt that it is a native. (Plate iii.: 1, flower; 2, petals; 3, transverse section of fruit; 4, fruit.)

COMPOSITÆ.—*Helipterum floribundum*, D.C., var. nova *tubulipappum*. Corollæ lobis inæqualibus, uno profunde inciso, pappi setis planis 6-8, dimidio inferiore in tubulum connatis.

Oodnadatta (Miss Staer). A variety with slightly woolly, rigid branches, the involucre bracts all pure white, as in the type, but pappus semitubular, as in *H. Trædelii*, F. v. M. Similar specimens from Mount Lyndhurst, labelled "*H. floribundum*," are in the herbarium of the Museum of Economic Botany. Differs not only in pappus, but in the larger leaves and stouter stems, from the slender form found in the mallee country from Dublin northwards towards Port Augusta, with the outer bracts golden-brown and the appearance of an annual (? var. *Sturtianum*, Benth.). The flowers

in each head of var. *tubulipappum* number over 100. (Plate ii.)

*Senecio odoratus*, Hornem., var. nova *obtusifolius*. Differt a formâ typicâ foliis obovatis glaucis crassiusculis flaccidis confertis, auriculis parvis parce dentatis, paniculâ densiore.

Along the coast at Port Elliot. This low, leafy shrub seems to be a maritime form of *S. odoratus*. Although it has a very distinct aspect, I can see no difference in the flower-heads which would justify raising it to the rank of a species. (Plate iii.; 1, flowerhead; 2, leaf of var. *obtusifolius*; 3, leaf of typical form.)

STYLIDIACEÆ.—*Leeuwenhoekia Sonderi*, F. v. M. Tintinnarra, in very poor soil among the scrub. Hitherto only recorded for Victoria. Distinguished from *L. dubia*, Sond., by the labellum with dark crimson hood, shorter corolla (2 mm. as against 4 mm.), and calyx-lobes glabrous, instead of glandular-hairy.

EPACRIDACEÆ.—*Leucopogon hirtellus*, F. v. M., var. nova *glabrifolius*. Eyre Peninsula (S. A. White), exact locality not given. Differs from the type, which is only recorded from Victor Harbour, in its glabrous leaves, glossy-green on the upper side. In my specimen they are shorter than in the typical form (4.5 mm. as against 7.8 mm.). The Museum of Economic Botany contains specimens of var. *glabrifolius* from Kangaroo Island.

PLUMBAGINACEÆ.—*Statice psiloclada*, Boiss. Well established in places on Lefevre Peninsula (F. S. Salisbury).—An ornamental plant from the Mediterranean region.

BORAGINACEÆ.—*Anchusa capensis*, Thunb. Robe (C. D. Black). A garden escape.—South Africa.

LABIATÆ.—*Calamintha Nepeta*, Savi. ("Lesser Calamint"). Roadsides near Mitcham.—Europe. *\*Salvia horminoides*, Pourr. This species may be very well separated from *\*S. verbeneca*, L. ("Wild Sage"), as is done by many botanists. It is distinguished by corolla only slightly exceeding the calyx and leaves less deeply cut. Both species are common here.—Southern Europe.

CHENOPODIACEÆ. — *\*Chenopodium ambrosioides*, L. ("Mexican Tea"). Port Lincoln (H. H. D. Griffith).—Southern Europe, America.

ILLECEBRACEÆ.—*Scleranthus minusculus*, F. v. M. Murray Bridge (H. H. D. Griffith).—Hitherto only recorded for Victoria.

SCROPHULARIACEÆ.—\**Linaria græca*, Chav. Common near Clarence Park.—Mediterranean region.

PLANTAGINACEÆ.—\**Plantago Bellardii*, All. Bordertown (Miss Turner).—Mediterranean region.

OROBANCHACEÆ.—\**Orobanche Mutelii*, Schultz. Sands near Glenelg (S. Dixon).—Mediterranean region.

PROTEACEÆ.—Note on *Grevillea quinquenervis*, Black (Trans. Roy. Soc., S.A., xxxiii., 325). This species seems to be most closely allied to the broad-leaved form of *G. oleoides*, Sieb., var. *dimorpha*, Benth. (*G. dimorpha*, F. v. M., var. *latifolia*), of Victoria and New South Wales. It is distinguished from the eastern species by leaves shorter and 5-nerved, a shorter perianth-tube with whitish tomentum and the lower half bearded internally (instead of a reddish tomentum and the upper half of the tube bearded internally). It has also a much shorter pistil.

EUPHORBIACEÆ.—\**Euphorbia falcata*, L. Reephram, near Adelaide (F. S. Salisbury).—Mediterranean region.

NAIADACEÆ.—\**Aponogeton distachyum*, Thunb. ("Cape Pondweed"). Creeks near Mount Lofty (H. H. D. Griffith). Probably a garden escape.—South Africa.

LILIACEÆ.—\**Ornithogalum arabicum*, L. Robe. A garden escape.—Mediterranean region.

GRAMINEÆ.—\**Schismus fasciculatus*, P. B. (*S. marginatus*, P. B.). Near Cockburn.—Mediterranean region and South Africa. *Sporobolus indicus*, R. Br. Banks of Torrens near Botanic Park (F. S. Salisbury) and Adelaide Park Lands.—Most warm countries, including the Eastern States of Australia and the Northern Territory.

## DESCRIPTION OF PLATES.

### PLATE II.

*Helipterum floribundum*, D.C., var. *nova tubulipappum*.—Flower, pappus, corolla, and involueral bracts.

*Asterolasia muricata*, sp. nov.—Flower and section of pistil.

### PLATE III.

*Carum sioides*, sp. nova.—1, flower; 2, petals; 3, transverse section of fruit; 4, fruit.

*Senecio odoratus*, Hornem., var. *nov. obtusifolius*.—1, flower-head; 2, leaf of var. *obtusifolius*; 3, leaf of typical form.



**OBSERVATIONS ON THE HABITS OF THE LARGE CENTRAL AUSTRALIAN MONITOR (*VARANUS GIGANTEUS*), WITH A NOTE ON THE "FAT BODIES" OF THIS SPECIES.**

By E. C. STIRLING, M.D., Sc.D., F.R.S.

[Read June 13, 1912.]

PLATE IV.

As the opportunity of observing, at close quarters, the large Central Australian Monitor lizard, *Varanus giganteus*—and for that matter the same may be said of many other of our native fauna—does not often occur, I have thought that a few notes respecting some of their habits may not be without interest to members of the Society.

By the kindness of Mr. G. K. Grant Warren, of Balariung, William Creek, the National Museum received on February 9 of this year two living specimens of this species, both males, as was subsequently ascertained by dissection. Unfortunately by the misapplication of terms which is so common in Australia, the name "goanna" is commonly applied to this, as well as to some other species of Australian Varanidæ, the word being generally understood to be a corruption of iguana, which properly belongs to quite a different group of lizards that is unrepresented in Australia. The origin of the name Monitor, which constitutes the vernacular designation of the Varanidæ, is peculiar. The native name of the Egyptian representative of this group is "ouaran," which is the Arabic term for lizards in general; this word written as "waran" has been confused with the German "Warnen," to warn, hence these reptiles have been called Warn-eidechsen, or warning lizards, and it is this erroneously derived idea of warning, or admonition, which has found expression in the Latin term Monitor.<sup>(1)</sup>

The particular species, *Varanus giganteus*, is known locally in regions adjacent to Lake Eyre as "Perentie," or by its variants "Perinthie," or "Parenthie," which words I believe have originated from a native name, though I am not aware of the tribe to which it belongs. Further north, in the MacDonnell Ranges, it is called Echunpa, in the Arunta language, and it gives its names to one of the most important totem divisions of that tribe.

For some time we have been anxious to prepare for the Museum collection some properly-mounted specimens of this reptile, and, with that view, we were glad to have the opportunity of keeping them under observation so that we might

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(1) "Royal Natural History," R. Lydekker, Section ix., p. 150.

learn something of their habits and attitudes, of which very little appears to be known. With this view they were placed together in a large wire-netted cage, about 10 ft. long by 4 ft. wide by 3 ft. high, which gave them plenty of room to move about.

Though, from what can be gleaned from books, there appears to be a general similarity as to habits in all the members of this well-marked and widely-spread group, I could find but the scantiest references to this Australian species, and, supplementing our own observations by the results of inquiries made from those who know the animal in its wild state, I am able to offer a few notes of a little-known reptile that may not be without interest. Incidentally our observations have enabled us now to mount specimens in natural attitudes and so to correct various errors into which even the most careful taxidermist can scarcely avoid falling if he has never seen the animal he deals with alive.

In this connection one may express regret that so many reproductions of badly, or unnaturally, mounted specimens, or of inaccurately-drawn plates, have found their way into books of natural history purporting to give true representations of the animals in their natural state. These reproductions, repeated as they so often are from book to book, or serving as models for other mounted specimens, lead to the perpetuation of very erroneous ideas as to the real attitudes and true appearance of the animals in life. It is hoped that the illustrations accompanying this paper, which are reproductions from photographs of the living animals, will, so far as the species is concerned, at least serve as faithful models, either for the taxidermist or zoological artist, of an animal not often observed at close quarters. I think it will also be acknowledged that the Museum taxidermists have in their recently mounted specimens very accurately reproduced some of the unsuspected yet, as it appears, very characteristic attitudes of these reptiles.

The two monitors, received in a perfectly sound and healthy condition, and in process of shedding their skin in patches, were kept under observation in their cage for over three months. From what I had heard of their great voracity and comprehensive tastes in their wild state I anticipated that there would be no difficulty in feeding them, but though eggs, dead and live mice and sparrows, live guinea pigs, and a live rabbit were at different times placed in the cage, they voluntarily ate nothing, and, with the exception to be mentioned directly, they did not attempt to interfere with any of these animals, nor did the latter show any fear of their formidable companions. Thinking the reptiles might at

length be feeling the effects of starvation, and it was evident that they were becoming emaciated and less active, they were on two occasions taken out of their cage and forcibly fed with strips of raw meat—a matter of some little difficulty in the case of the larger specimen on account of his size and strength. It was after the second of these feedings, when possibly excited by the handling or by the taste of meat, that the larger reptile seized the live rabbit, then in the cage, by the loins, holding on to it with a bulldog grip that was never changed or relaxed until the victim died. But it made no attempt to eat the rabbit, though this was left dead in the cage for two days. The guinea pigs used to run over the reptiles, sometimes even perching on their heads in the most confiding way.

The result of this abstinence from food was a progressive emaciation and dwindling vigour, though on being excited they showed themselves still capable of powerful and active movements. Even at the end of the starvation period of three months the larger specimen still retained, as was shown by dissection, two solid masses of fat weighing a pound each. These will be subsequently described.

In their wild state, Mr. Warren informs me, the Perentie is practically omnivorous as regards flesh foods, its diet mainly consisting of other lizards, snakes, birds, eggs, the smaller animals, and, of late years, the rabbit, the only animal of small size that is immune to its attacks being the echidna. The late Mr. Gillen told me he saw one catch and kill a one-third grown kangaroo, and then, placing his forefeet on the body, it tore out pieces of flesh like a dog.

Everyone that has seen these reptiles in their wild state testifies to the extraordinary pace with which they can travel over the ground, and that agility was still manifest in our specimens under the limitations of their cage. In this, when moving quickly, their gait was distinctly quadrupedal, the body, head, and tail being raised some inches above the ground, but, I am informed by Mr. P. Barbe Ayliffe, that when travelling at their topmost speed the forelimbs are raised from the ground, so that their gait then becomes bipedal. We had, however, no opportunity of observing this under the restricted space in which our specimens were confined. I have myself seen this mode of progression, which recalls that attributed to some of the extinct dinosaurs, to take place in the Frilled Lizard (*Chlamydosaurus kingii*), and it has also been noticed by Mr. J. Rau, one of our taxidermists, in the case of *Amphibolurus cristatus* under extreme speed. It is probable, I think, that closer observation would show a similar mode of progression for other of the more swiftly moving lizards.

One feature of the Perentie became immediately apparent,

*viz.*, the habitual use of the long and muscular tail as a weapon of offence. Whenever the animals became excited either by the suspicious movements of one another, or by being touched by a rod, or even by the too close presence of spectators, most vigorous blows that resounded against the sides of the cage were struck with this organ. The striking of the blow could generally be anticipated by the preparatory attitude in which the tail was held, that is to say, it was flexed well to one side in a curved position, the muscles being manifestly tense. To prevent any obstruction to the blow the thick proximal part and the end of the tail were held clear of the ground so that it touched only by a limited length of its middle portion. Mr. Gillen, who was well acquainted with these animals, informed me that he once saw a large Perentie knock down a native woman in this way by a blow on the legs, and Mr. Warren writes that he had known both forelegs of a dog to be broken in a similar manner. No one who has seen the force of these blows could have any difficulty in accepting such statements.

This offensive use of the tail is described <sup>(2)</sup> in the case of *Varanus salvator*, apparently the largest member of this group, which inhabits Ceylon, the Malay Peninsula, and the islands of the Malay Archipelago, and extends, according to the British Museum Catalogue of Lizards (1885), to the Cape York Peninsula of Queensland, but I have not seen the habit noticed in the case of *Varanus giganteus*. It is, however, not unlikely a common feature of the larger members of the group. When alarmed the Perenties have a habit of running up trees in their efforts to escape, which they do with extraordinary swiftness; they have been known, also, to run up a man or a horse, probably, in their alarm, mistaking these vertical objects for trees. On one occasion, at Alice Springs, Mr. Gillen treated the lacerated breasts of a lubra who had been attacked by one, and, according to this informant, the blacks, who have a fear of these animals, state that such attacks were not uncommon. It may be, however, that the attacks are not deliberate, but that in their alarm and desire to escape they run up the first vertical object that presents itself, under which circumstances wounds would not unlikely result from the very sharp and strong claws or even from the teeth.

Notwithstanding the fear of the natives for these reptiles their flesh is esteemed a great delicacy, and it is no doubt in consequence of the appreciation of it by the adults that it is one of the foods (which, it may be observed, are generally of some gastronomic merit) that are forbidden to uninitiated boys

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(2) "Reptiles of the World," R. L. Ditmars.

of the tribe.<sup>(3)</sup> I have also heard white men speak approvingly of the flesh of the tail of the Perentie, though in the case of one man who had often tried he stated that it always induced vomiting.

The aspect of the head and neck is very snakelike, and it was noticed that in moving amongst the branches of a dead limb placed in the cage in imitation of a small tree that the Perentie was able, while holding on by the grasp of its hind limbs only and by utilizing the tail as a lever, to project the rest of the unsupported body into space while seeking for a hold for the fore paws.

When excited or provoked they utter a sound which may be described as a combination of a hiss and of a continuous blowing sound like that of a blacksmith's bellows, and under these circumstances of provocation the throat is inflated into a large and conspicuous pouch, often to a more considerable degree than is shown in pl. iv., figs. 1 and 2; the long-forked tongue is also protruded and withdrawn with lightning-like rapidity.

They are stated to be capable of being readily tamed, and I have been told of one that used to appear regularly at stated times to be fed and to follow its adopted master about.

In their native habitat they usually live in holes in the ground, and, according to Mr. Warren, they prefer a hole that enters under a rock to one in the open ground. In these holes they hibernate from May to August, living sometimes singly and sometimes male and female together.

*Distribution.*—As is so often the case with many of our Australian animals, we have very little information as to the exact distribution of this species. Many, indeed, of our animals have already become extinct without our having been able to answer this question, and it will probably be the same with many others. Mr. Gillen told me that they occur in Central Australia from about Strangways Springs, in the south, to Hann's Range, about 80 miles north of the MacDonnell Ranges, but as to its range east and west of this tract I have no information. Its favourite habitat being rough, stony country, its distribution is no doubt largely determined by these conditions. The late Mr. John Bagot used to speak of them as common and of large size on what was, then, his Peake Station, which comprised the country around Warrina, and Mr. Warren writes that they are only found on certain limited parts of the rough country on Anna Creek Station.

So far these limits constitute *Varanus giganteus* a Central Australian species, but in the British Museum Catalogue of Lizards (1885) one, the type of the species, is stated as having come from the "North Coast of Australia," which seems to

<sup>(3)</sup> Spencer and Gillen, "Native Tribes of Central Australia," p. 471.

indicate that the species may have a more extended range than is indicated by its Central Australian distribution.

*Size.*—In this respect, as might be anticipated of such relatively large lizards, one hears most exaggerated statements. The late Mr. John Bagot, however, assured me that he had seen specimens 7 ft. 6 in. in length, and I have it from Mr. Gillen that one killed by himself measured 7 ft. 2 in. The total length of the largest of the few stuffed specimens recorded in the British Museum Catalogue of Lizards (1885)<sup>(4)</sup> is given as 206 cm., or 6 ft. 9 in., but it is not stated whether this measurement referred to the actual animal, to the skin, or to the mounted specimen. A detailed statement of the dimensions of our own specimens will appear directly, but in the meantime it may be said that the total length of the larger of the two was 5 ft. 10½ in., and of the smaller 5 ft. 4½ in., and that their weights, at the close of what was practically a starvation period of more than three months, during which they manifestly lost bulk, were respectively 17 lb. and 9 lb. It will thus be seen that though not differing greatly in length there was a very marked difference in the weight of these two specimens. Not long ago we received the skin of a specimen from William Creek, the length of which, when mounted, is identical with that of the larger of our two living specimens, but this skin may have been somewhat stretched in its removal, which is very liable to happen under the hands of an unskilled operator, who was in this case an aboriginal. Relatively large amongst other lizards as are these land reptiles, they are, nevertheless, the dwarfed descendants of much larger lacertilian forms, for we have in the Museum a few vertebræ of an extinct Monitor (*Varanus priscus*, Owen) obtained at the Warburton River which, if the size may be reckoned by crocodilian comparisons, must have been 20 ft. in length, or possibly even larger.

Table showing dimensions of two specimens of *Varanus giganteus*:—

	Male A. cm.	Male B. cm.	Longest Specimen in British Mus. Cat. of Lizards (1885).
Total length ... ..	179.5	163	206
Head (maxm.) ... ..	13.6	12	14 (5)
Neck ... ..	18	15	22
Body ... ..	47.8	42.5	53
Tail ... ..	100	93.5	117
Fore limb ... ..	25.2	21	27
Hind limb ... ..	32.1	29	35
Weight, in lbs. (after 100 days' starvation period)	17	9	—

(4) This is the type specimen.

(5) It is not stated whether this refers to the maximum length of the head or to that taken in the median line, which falls short of the former. In our own specimens the maximum length is given.

In the description of the conspicuous colour-markings of this species the British Museum Catalogue, while correctly stating the neck and throat to be marked with large blackish reticulations on a white ground, adds that the belly is immaculate. In the larger of the two above-mentioned Museum specimens the chest was marked by four well-marked single, irregularly zig-zagging, but on the whole, transverse black bands, and the belly by six double bands of similar disposition, the reticular pattern appearing on the sides. A very little fore-and-aft approximation, however, of the ventral bands would have formed a reticular pattern by the meeting of the angles of the zig-zag lines. In the smaller specimen the belly was marked with a reticular pattern similar to that on the sides of the neck, only much fainter in colour.

*Fat-bodies (Corpora adiposa).*—A median longitudinal incision through the front of the abdominal walls exposed on either side a large lobulated, dorsoventrally compressed mass of firm, bright-yellow fat, which, but for its slender vascular attachments at the posterior end, lay free in an apparently closed extra-peritoneal cavity. The inner or median wall of this cavity was formed by a smooth, tough membrane, which apparently constituted the parietal peritoneum of the abdomen, while on the outer side the fat mass lay in close contact with the glistening inner surface of the lower ribs and abdominal walls.

The constituent lobules composing these fat masses were, for the most part, irregularly, transversely arranged, the length of the lobules being generally coincident with the width of the adipose mass, though some fell short of this, and, in consequence of their close and accurate coaptation, the body as a whole appeared as a more or less superficially lobulated, but otherwise compact, mass. The compactness was, however, only apparent, for the constituent lobules were very easily and naturally separable from one another, being held together only by a superficial connective tissue capsule of extreme tenuity and slight vascularity on the front and back of the organ, but of rather firmer texture at the ends of the lobules, where these together formed the lateral margins of the body. Thus, when the removed fat mass was held up by one end, the weight of the dependent lobules was sufficient to rupture to a great extent the connective tissue attachments of the lobules on the front and back, so that these fell away from one another for the greater part of their length, remaining joined chiefly at their ends, that is to say, at the lateral edges of the body, where the inter-lobular attachments were strongest. The appearance under these circumstances was that of a thick pad or cushion of fat perforated by transversely disposed fenestræ,

these apertures being widest at points corresponding to the centres of the lobules and becoming narrower and more slit-like towards their ends, where they still remained attached.

The combined weight of the two masses in the largest specimen at the close of a three and a half months' starvation period was 2 lb.

Concerning the full significance of these fat bodies our knowledge is still incomplete, but according to C. K. Hoffmann<sup>(6)</sup> they correspond to the *corpora adiposa* of Amphibians and have some relation to the sexual activities, a view which is supported by their periodic increase and decrease of size. They reach, says this writer, their maximum of development in Spring. From the composition of these bodies it is also reasonable to suppose that they may serve as reservoirs of fat to be utilized for nutritional purposes during the hibernation period, but if so it is remarkable that they should still have been so large (constituting 12 per cent. of the total body weight) at the close of the long fast, when all other obvious adipose tissue had disappeared from the body. As, however, the animals when killed had evidently shrunk in bulk, particularly in respect to the region of the trunk, it is very probable that some amount of reduction in the fat masses had taken place.

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#### DESCRIPTION OF PLATE IV.

##### *Tarantulus giganteus*.

The three figures, taken from life, represent the animals in characteristic attitudes. In figs. 1 and 2 the larger specimen shows the gular pouch inflated to a moderate degree; the latter figure also shows the body completely raised from the ground, and the tail, here concealed behind the body, was also similarly raised, as well as strongly flexed. The great length of the tail is shown in figs. 1 and 3, and the snake-like appearance of the head is seen in the case of the smaller animal in both these figures.

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<sup>(6)</sup> Bronn's Thierleben Abt 3, Reptilien (Eidechsen und Wasserechsen, p. 994).



# NOTES ON RECURRENT TRANSGRESSIONS OF THE SEA AT DRY CREEK.

By WALTER HOWCHIN, F.G.S., Lecturer in Geology and  
Palæontology, University of Adelaide.

[Read July 11, 1912.]

By the courtesy of Mr. T. G. Ellery, Town Clerk of Adelaide, my attention was called to an interesting section exposed by the sinking of a drainage tank connected with the City Abattoirs. The tank is situated in the south-east corner of Section 920 (Grand Junction), Hundred of Port Adelaide, at the five cross-roads, about a mile to the south of the Dry Creek Railway Station. I visited the spot in company with Mr. Filmore, an officer of the City Council, and was enabled to make a careful examination of the section, which proved to be as follows:—

	ft.	in.
1. Surface soil—loamy clay ... ..	5	6
2. Reddish sharp sand, slightly argillaceous ...	2	0
3. Very compact red clay ... ..	7	6
4. Bluish, grey, to whitish clay, thickly beset with fragmental shelly matter ... ..	2	6
5. Bed of <i>Ostrea</i> , <i>Arca</i> , etc., in great numbers ...	2	0
6. Blue clay of unknown depth ... ..	0	6
	20	0

The flats between Port Adelaide and Dry Creek Railway Station have been but recently elevated above sea-level. The railway at Dry Creek is, according to the official figures, 16 ft. above low-water mark, and as the average height of the tidal wave is estimated at 8½ ft., it follows that the railway is only 7½ ft. above high-water level. Indeed, the elevation of the maritime plains is still incomplete, as is evidenced by the extensive estuarine area of the North Arm, with numerous reticulating creeks and swamps which occupy most of the area. The intervening land surfaces are mostly saline and covered with samphire growths. These flats have been built of estuarine mud containing shells characteristic of such a habitat. The shells can be found abundantly strewn over the surface of the ground and along the sides of the creeks, but especially on the artificial embankments that have been constructed by heaping up the adjoining mud. Among the commonest forms thus found are *Chione corrugata*, *Ampullarina quoyana*, species of *Risella*, and *Bittium estuarium*.

Several small creeks in the neighbourhood of Dry Creek arise from seepings from the higher ground, are moderately fresh, and flow north-westerly into the North Arm inlet—the tidal waters of the latter come up to within about a mile of Dry Creek.

On the eastern side of Dry Creek Railway Station there is a gradual rise of the land, which is at once made evident by a change of herbage, but in some directions the marine shells can be traced on the eastern side of the railway as well as on the western. It is, however, difficult to draw the limits of the old estuarine area as, since the retreat of the sea, a certain amount of land-wash and the accumulation of a humus soil have made a covering that obscures the estuarine silts. In constructing the new portion of the line to the Abattoirs, on the north-east side of the railway station, and at about a quarter of a mile from the latter, it was found necessary, in making an embankment, to excavate to a shallow depth the soil on either side of the permanent way, and in doing this the shelly marine clays that underlie the top soil became exposed. In this situation *Ampullarina quoyana* is very common, *Risella* is less so, and *Chione* is rare—at least so far as surface indications go. The elevation of this bed above present sea-level (tested by aneroid) appears to be about the same as that of the Dry Creek Railway Station. The slightly drier conditions at this point have permitted the growth of a travertine crust overlying the shelly bed, varying in thickness from  $\frac{1}{2}$  in. to 3 in. It is not a pure limestone, but the partial decomposition of the shells has yielded a cementing agent by which the immediately overlying soil has become consolidated into a crust. The material thrown out from recently dug post-holes, adjacent to the shelly bed, supplies evidence that much of the underlying red sands have also been hardened, probably from a like cause, into a sand-rock. Marine shells were rarely found thrown out from these post-holes, which suggests that the shelly bed is superficial and, in this position, of no great thickness.

The occurrence of this raised sea-bed was recognized by the late Professor Ralph Tate soon after his arrival in South Australia, and in his Presidential Address before this Society (then known as the Adelaide Philosophical Society) in 1879, stated, "The estuarine limestone, which fringes the Dry Creek salt marsh, and which is of about 6 to 12 in. thick, and crowded with *Amphibola* [*Ampullarina*] *quoyana*, *Risella melanostoma*, and other littoral shells, is not more than 12 ft. above ordinary high-water mark. The limestone overlies the drift, but graduates into the estuarine muds and sands which occupy the salt marsh. The marsh is at rare intervals over-

flown, but extraordinary tides do not reach the estuarine-limestone." (1)

The geological section exposed in the present excavation at Dry Creek is of very great interest as showing alternations of the height of the land in relation to the sea that has led to repeated modifications of our coast-line. It has been a complex movement in which the sea has twice transgressed upon the land and twice retired during recent geological times. This conclusion is reached by a twofold testimony—(1) the stratigraphical succession, and (2) the zoological evidence.

With regard to the geological succession, there are two fossiliferous horizons, one at or near the surface and the other at a depth of 18 ft. below the surface, and in between these two marine horizons there are some 16 ft. or 18 ft. of alluvial wash. The upper marine bed was not detected in the sinking now under description, but its prevalence in the neighbourhood is abundantly evident. The bed of triturated shells (No. 4 in section) which immediately overlies the oyster bed, may have accumulated, at least in part, by the action of surface water acting on the fossiliferous material after the retirement of the sea; but if we exclude this doubtful bed, there remains 15 ft. of fresh-water deposits that mark the interregnum between the two encroachments of the sea. The blue clay (No. 6 in section) that underlies the oyster bed is no doubt the tenacious blue clay of the Adelaide plains, probably of Pleistocene Age, which is met with in most sinkings in Adelaide and neighbourhood, and forms the brick-earth of our local potteries and brick-making. It is a fresh-water deposit, and marked the base of the water-level in the present sinking at Dry Creek, as the oyster bed, which is immediately above it, carried a strong runner of water.

There is a marked contrast in the organic facies of the two shell-bearing beds. The upper-bed carries just such mollusca as live in our estuaries to-day, and in about the same relative proportions. It is essentially a present-day type of deposit. The lower marine bed, in addition to carrying such forms as still live in the Port Creek, contains others that do not exist there at the present day. The large oyster, *Ostrea angasi*, which is the most striking shell in the lower bed, although plentiful, in places, in Spencer Gulf, no longer occurs, or but rarely, in our local waters; and *Arca trapezia*, which is also a very common form in the Dry Creek lower marine bed, is no longer an inhabitant of South Australian waters. These two shells do not occur in the superficial

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(1) Trans. Philosoph. Soc. of Adelaide [Roy. Soc., S.A.], 1878-9, p. lxxix.

marine bed, but they are the principal forms that make up the lower marine bed. The altered distribution of these two species in our local sea-areas marks an important interval of time—a measure of time that must have been sufficiently long to permit of a gradual change of conditions that led up to the total extinction of one species and local limitations of another species, in South Australian waters.

A sample of the lower marine bed was washed and on examination the following foraminifera were noted:—

*Miliolina secans*, d'Orb.; *M. circularis*, Bornem.; *M. undosa*, Karrer; *M. boueana*, d'Orb.; *M. oblonga*, Montagu.

*Triloculina trigonula*, d'Orb.; *T. tricarinata*, d'Orb.

*Spiroloculina grata*, Terq.

*Pulvinulina repanda*, Fichtel and Moll; *P. punctulata*, d'Orb.

*Rotalia beccarii*, Linn.

*Polystomella crispa*, Linn.

The above are all shallow-water forms, but scarcely typical of estuarine conditions. *Polystomella crispa* is in great numbers, and *Triloculina trigonula* and *Rotalia beccarii*, although not so plentiful as the first named, are common forms in the material. All the species present are represented by strongly built examples and are more typical of open sea conditions than a brackish estuary. On the other hand there is a remarkable absence of some of the commonest species which occur in the shallow waters of our present seas, more especially *Nubecularia*, which is the commonest foraminifer of our coasts and, in most gatherings, number more than all the other foraminifera together—yet not a single example of this form was observed in the Dry Creek material. In addition to the foraminifera several species of *Entomostraca* (*Ostracoda*) were noted.

All the shells contained in this bed were honeycombed by boring organisms to an unusual degree. Many of the shells had been perforated to such an extent that scarcely any portion of the shell preserved its solid form—and every shell appeared to have been more or less attacked in this way. The parasitic intruder was probably the minute boring sponge, *Cliona*, which makes a host of any shell or calcareous rock that it may find handy to utilize for this purpose. The waters, at the locality referred to, must have supplied congenial conditions for the development of this particular organism.

The geological section at Dry Creek shows a close accordance with similar sections that have been exposed in excava-

tions near Port Adelaide. In 1886 I submitted to the Society a short paper<sup>(2)</sup> on one such an exposure, and therein stated that "there are strong presumptive evidences, based on several collateral lines of proof, that the Post-Tertiary beds of the seaboard do not represent a regular succession of marine beds, but that there was a break in the continuity of their deposition. In the view we have taken, there is an *older* and a *newer* bed of recent marine, with an intercalated formation of fresh-water origin dividing the same, and connected with the fresh-water bed two horizons representing dry-land conditions."<sup>(3)</sup>

The above conclusion, reached twenty-six years ago, has received its confirmation in the Dry Creek section. When allowance is made for the different situations and the natural thinning of the beds to landward, the two sections may be regarded, in their main geological features, as practically identical. In the Glanville section the upper marine bed was laid down on an open sea beach, consisting of white sand, littoral waste, and layers of sea-weed deposited by wave action; while at Dry Creek the corresponding bed is an estuarine clay, laid down in a land-locked back-water, of which the present North Arm inlet is the shrunken remnant. The lower marine bed at Glanville is highly calcareous, in places almost a limestone, and was laid down probably under some depth of water, while the corresponding bed at Dry Creek is a silt that accumulated under shallower conditions. The range of life was much more restricted in the Dry Creek area than it was in the open sea conditions represented at Glanville. The large warm-sea foraminifer, *Orbitolites complanta*, which occurs plentifully in the Glanville section, is entirely absent from the Dry Creek bed, probably excluded by the shallowness of the waters and their more muddy condition, but the important time-indicator shell, *Arca trapezia*, is abundant in both localities.

By the courtesy of the officers of the Engineer-in-Chief's Department I am informed that the level-crossing at the railway, situated a short distance to the west of the excavation at Dry Creek, is 19.84 ft. above low-water mark. The difference of level between this crossing and the excavation is inappreciable, so that it may be said that the upper limits of the *Ostrea-Arca* bed is about 2 ft. above present low-water mark, and that, were it not for the land-wash that has dammed back the sea, the bed in question at Dry Creek would

(2) "Remarks on a Geological Section at the new Graving Dock, Glanville, with Special Reference to a supposed Old Land Surface now Below Sea-level," Trans Roy. Soc., S.A., vol. x., pp. 31-35.

(3) *Loc. cit.*, p. 35.

be submerged at high water to the extent of  $6\frac{1}{2}$  ft. At Glanville the same bed, if relieved of the overburden, would be submerged at high water by about 25 ft. or 26 ft., which difference can be easily accounted for by the gradual slope of the old sea floor towards the west. In the Dry Creek section, 12 ft. to 15 ft. of fresh-water sands and clays separate the two marine deposits, while, at Glanville, the thickness of the alluvial wedge amounts to 11 ft., if we recognize the beach deposits as the base level of the upper marine bed, and 26 ft. if we take the full thickness between the lower marine and the fossiliferous estuarine clay at the top of the section, which seems to be the same horizon as that represented in the upper marine at Dry Creek.

At both Dry Creek and Glanville the lower marine bed rests on alluvium. The next marine horizon below those dealt with in this paper is that of the Lower Pliocene, proved in the boring for water put down by the Australian Smelting Company, at their works, at Dry Creek.<sup>(4)</sup> The site of the bore was at the margin of the recent marine sites, 14 ft. above sea-level. The Lower Pliocene marine sands were met with at a depth of 320 ft., so that a period sufficiently long to permit of the laying down of 300 ft. of alluvial material must have intervened between the withdrawal of the Pliocene sea and its return in Pleistocene times. It may be interesting to point out that we now have evidences of five distinct recurrences of sea-intrusion in the neighbourhood of Adelaide, *viz.*, Recent, Sub-Recent, Pliocene, Miocene, and Eocene, each of which intrusions was separated from the others in the succession by long periods of dry-land conditions.

(4) Tate "On the Discovery of Marine Deposits of Pliocene Age in Australia," Trans. Roy. Soc., S.A., vol. xiii., p. 172, 1890.

FURTHER NOTES ON AUSTRALIAN COLEOPTERA, WITH  
 DESCRIPTIONS OF NEW GENERA AND SPECIES.  
 No. XLII.

By the (late) REV. CANON BLACKBURN, B.A.  
 (Communicated by Mr. A. M. LEA.)

[Read August 8, 1912.]

[Just prior to his death Mr. Blackburn had completed descriptions of numerous species of the genus *Lepidota*; he had also described a few species of other genera, and was preparing to systematically investigate the *Dynastides*. As his writings are quite ready for publication, and the types of the new species are marked as such, it appears very desirable that these, his final descriptions and notes, should be published.—A. M. LEA.]

LAMELLICORNES.

LIPAROCHRUS.

*L. hackeri*, sp. nov. Minus nitidus; piceo-niger, sat convexus; ovatus; supra glaber; clypeo subtiliter punctulato, antice late truncato, lateribus ante oculos subito fortiter dilatatis; prothorace fortiter transverso, antrum fortiter angustato, supra in disco sat lævi latera versus subtiliter subobsolete punctulato, lateribus leviter arcuatis, angulis anticis acutis posticis rotundato-obtusis, basi subtiliter marginata; elytris subtilius geminatim striatis, striis subtiliter punctulatis, interstitiis planis sparsim subtilissime punctulatis; tibiis anticis extus bidentatis. Long., 6 l.; lat.,  $3\frac{1}{2}$  l.

Its larger size distinguishes this species from all its allies known to me. In my tabulation of characters of the known Australian *Liparochri* (Trans. Roy. Soc., S.A., 1905, p. 271) it falls beside *L. sculptilis*, Westw., from which it differs by, *inter alia multa*, its dorsal surface almost without puncturation, the elytral interstices (the alternate ones very wide) quite flat, the much stronger crenulation of the external margin of its front tibiæ, its much longer tarsi.

*L. hackeri* is probably nearer to some *Liparochri* described from New Guinea than to any previously known as Australian. From the descriptions of these it differs, *inter alia*, as follows:—From *L. dux*, Arrow, by the very distinct puncturation of its elytral striæ; from *L. ingens*, Felsche, by the smooth non-tessellated interstices of its elytral striæ; from *L. papuus*, Lansb., by its dark antennæ (the flabellum, of paler colour, excepted) and quite evidently punctulate

elytral interstices; and from *L. alternans*, Maccl., by its non-costulate elytra. The type seems to be a female.

North Queensland (Little Mulgrave River); Mr. Hacker; given to me by Mr. Lea.

*L. geminatus*, Westw. This species is very variable in respect of sculpture—especially that of the pronotum. I have examples from various localities in South and Western Australia which I cannot regard as representing more than one species, but among which there are very definitely two quite distinct types of sculpture on the pronotum—in some specimens that segment bearing extremely fine short transverse scratches, while in others the scratches (similar in shape) are very much larger and deeper (quite twice as large). The specimens with finer puncturation have also the external teeth of the front tibiae smaller and blunter than those of the others and are on the average of smaller size. Both these forms occur near Adelaide. I observe similar differences among specimens all of which I have taken to be *L. multistriatus*, Har., the only other *Liparochnus* of which I possess numerous specimens. I have hitherto regarded these differences as sexual. I cannot, however, discover any marked difference between the front claws of the two forms which, as pointed out by Mr. Arrow (Trans. Ent. Soc., London, 1909) distinguishes the sexes of two *Liparochni* of which I do not possess a male. I notice that in the paper quoted Mr. Arrow describes a *Liparochnus* (*timidus*) allied to *L. geminatus* of which he had before him "a series of specimens" and does not refer to its sexual characters, from which I assume that in it the sexual difference of the claws is wanting. The species which I take to be *silphoides*, Har., presents the sexual distinction in the claws. Mr. Arrow's two species mentioned above as having the claw distinction and the species which I take to be *silphoides* (probably=*L. raucus*, Fairm.)—also the species described above as *L. hackeri*, of which the type is probably a female—another species which I take to be *H. sculptilis*, Westw. (probably=*H. ciliboides*, Har.), and of which I believe my specimen to be a female—*L. alternans*, Maccl. (not *alternatus*, as quoted by Arrow), and *L. papuus*, Har., are the only species known to me as having only two external teeth on the front tibiae (I do not possess the description of *L. sulcatus*, Montrouze). All of the above-mentioned species of which the male is known (and no others, so far as known) present a sexual distinction in the front claws, and all of them, so far as I know them, are of *facies* markedly different from the rest of the species attributed to *Liparochnus* (one of which, *L. geminatus*, Westw., is apparently the type species). If it should prove that the males of all of them have



asymmetrical claws it will probably be desirable to regard them as forming a genus distinct from *Liparochrus*. It may be added that Mr. Arrow, in the valuable memoir noted above, does not refer to the genus *Antiochrus*, Sharp, to the type of which he presumably has access, and on which I wrote some notes in Trans. Roy. Soc., S.A., 1905, pp. 273-5, those notes being conjectural to the extent involved in my not having seen the typical species.

#### PROCHELYNA.

*P. heterodora*, Burm. I have a specimen before me taken flying in the sunshine on Eyre Peninsula by Mr. J. S. Blackburn which there can be little doubt is this species. It agrees with Burmeister's description in every respect except in the scarcely perceptible tendency to reddish colouring at the base of its elytra, its being a trifle smaller than the type, and (as far as I can see) its mentum not particularly narrow. It unfortunately died with its head much depressed towards the prosternum, so that the form of its mentum—which is densely pilose—cannot be examined satisfactorily without breaking the specimen—indeed, in any case, dissection would be necessary. But even if the form of the mentum does not quite square with Burmeister's description, the close agreement with the decidedly unusual characters of sculpture, etc. (especially the elytra completely and quite strongly striate in their hinder half, but in front non-striate except close to the suture, the strongly pointed pygidium, the red bristles fringing the elytra), would certainly, I think, point to the probability that Burmeister's description of the mentum is defective rather than to the likelihood of two species occurring in South Australia so closely resembling each other and yet differing in the form of the mentum. I note some hairs about the margin of the pronotum suggestive of the probability that my specimen is abraded (as was, in that case, probably Burmeister's type), and that in a fresh specimen the pronotum is more or less pilose.

*P. rubella*, Schauf. There is no mention in the brief description of this species of any character indicative of its being rightly referred to *Prochelyna*, or even to the *Systellogid* Group—nor, on the other hand, of any character inconsistent therewith. I have hitherto considered that the phrase “(pronoto) *utrinque medio tubere prædito*” rendered it unlikely to be a *Systellogid*, but the examination of a specimen referred to below under “*Atholerus*” has shaken that opinion, and there seems to be no definite ground left, apart from Schaufuss having called it a *Prochelyna*, for referring it to any particular genus. It is much to be desired that the type be examined and reported on.

## ATHOLERUS.

A specimen from the Swan River belonging to Mr. Lea is, I think, certainly a member of this genus, and I can find no reason to separate it generically from the specimen discussed above as being probably *Prochelyna*, unless a dissection of the mouth organs of both species should serve the purpose. Even as *species* the two are decidedly close. The specimen from Swan River agrees very well with the description of the typical species (*A. obscurus*, Shp.)—also from Swan River—except in its elytra being wholly fuscous (the lateral margins excepted) and not at the base only. It seems, however, to be certainly distinct sexually from the specimen I refer to *Prochelyna*, its antennal flabellum being much shorter, its tarsi evidently shorter, its pygidium notably less vertical and much more convex, and its ventral segments distinctly longer. Its most remarkable character, however, consists in the presence on the middle of the pronotum, a little behind the front, of a small deep fovea on the level of the general surface in its hinder part, but in its front part sinking into the general surface in such fashion that its front part has a semi-circular vertical wall, on either side of which there is a small but distinct tubercle. As the other characters of the specimen are fairly conclusive of its being a female, and this prothoracic fovea seems like a male character, I should be disposed to regard it as an accidental abnormality, were it not for the reference mentioned above to the presence of two tubercles on the pronotum of a species which Schaufuss has referred to *Prochelyna*. Unfortunately the *Systellopides* are so rarely met with that I have never yet been able to examine two specimens that are unquestionably the sexes of a single species. It should perhaps be added that the present insect and that I have discussed under *Prochelyna* can scarcely be the sexes of a single species, on account of considerable difference in elytral striation—which is not likely to be of a sexual character.

## LIPARETRUS.

*L. confusus*, sp. nov., Mas. Sat breviter ovalis; parum nitidus; niger, antennis palpis tarsis et (basi excepta) elytris plus minusve rufis; corpore toto pilis erectis vestito, his in capite pronoto et elytris obscure fulvis alibi cinereis; antennis 8-articulatis; clypeo subnitido, leviter subgrosse punctulato, antice late leviter emarginato; fronte confertim subtilius rugulosa; prothorace sat fortiter transverso, antice sat angustato, supra æquali, confertim sat fortiter ruguloso, lateribus arcuatis; elytris crebre fortiter nec grosse vix seriatim punctulatis, haud striatis, costulis vix manifestis circiter 2 instructis; tibiis

anticis extus 3-dentatis; tarsorum posticorum articulo 2° quam basalis sat longiori.

Fem. latet. Long.,  $3\frac{1}{2}$  l.; lat.,  $1\frac{1}{8}$  l.

This species is a member of my 14th Group of *Liparetri* (Trans. Roy. Soc., S.A., 1905), and in the tabulation (*loc. cit.*) must stand beside *nigrinus*, Germ., from which it differs by, *inter alia*, smaller size, bicolorous almost absolutely non-costulate elytra, darker pilosity of dorsal surface, and much more asperate pygidium and propygidium. It is perhaps nearest to the species I have treated as *L. sylvicola*, Fab., but differs from it by the very much less coarse sculpture of its dorsal surface (especially of the pronotum and propygidium), the much narrower black base of its elytra, etc. It differs from both the species just mentioned by the front of its clypeus widely emarginate.

Victorian Alps; Buffalo Mountain.

#### ANEUCOMIDES.

With much reluctance I find it necessary to refer provisionally to *Aneucomides*, the insect to be described below, since, in spite of great difference in facies and in some structural characters that would be generic in many groups of *Coleoptera*, I can find no structural distinction except in respect of characters that are certainly variable within the limits of some genera in the *Sericoides*. Unfortunately I have been unable to examine some of the mouth parts of the type-species of *Aneucomides*, as its specimen still remains unique, and it is not unlikely that the maxillæ might furnish a valid generic difference if they could be dissected in *A. coloratus*, but without such dissection the present insect must certainly be placed in *Aneucomides*.

*A. hirticollis*, sp. nov., Mas. Sat elongatus, subparallelus; sat nitidus; testaceus, capite antennis pedibusque nonnihil rufescentibus; capite sparsim, pronoto pygidio et corpore subtus dense, hirsutis; palpis maxillaribus valde elongatis, articulis 2° quam 3<sup>us</sup> multo longiori, 3° 4° que inter se sat æqualibus; maxillarum lobo externo sat fortiter bidentato; mento et palpis labialibus fere ut *A. colorati*, Blackb.; labro fere ut *A. colorati* sed magis exstanti; antennis sat elongatis, 8-articulatis, laminis 4 instructis (his articulis basalibus 4 conjunctis longitudine sat æqualibus, antennarum articulo 4° intus angulato; oculis sat magnis vix manifeste granulatis; capite confertim subtiliter punctulato; clypeo antice rotundatum modice reflexo; prothorace quam longiori duplo latiori, fere ut caput punctulato, antice parum angustato, lateribus leviter arcuatis, angulis anticis sat

rectis posticis leviter obtusis; elytris subtiliter geminatum striatis, sat sparsim vix subtiliter nec profunde punctulatis, interstitiis alternis quam cetera multo angustioribus obsolete convexis; pygidio abrupte verticali, antice subtiliter leviter (postice vix manifeste) punctulato; abdomine brevi confertim subtiliter sat profunde punctulato (segmento apicali fere lævi excepto); pedibus sat robustis, femoribus posticis sat fortiter tumidis, tibiis anticis extus tridentatis (posticis brevibus transversim unicarinatis a basi ad apicem fortiter dilatatis), tarsis elongatis gracilibus quam tibiæ multo longioribus; unguiculis gracilibus elongatis simplicibus.

Fem. latet. Long., 7 l.; lat.,  $3\frac{1}{2}$  l.

A much more elongate and narrow species than *A. coloratus*, Blackb., with the facies of a somewhat narrow *Haplonycha*. The antennæ are structurally much like those of *A. coloratus*, but decidedly longer and more slender, the maxillary palpi very different, but not more so than is frequent between species of *Haplonycha*. The abdomen short, strongly punctulate, and with extremely strong ventral sutures is characteristic of both species.

Western Australia (exact locality not known). Given me by Mr. French.

#### HETERONYX.

*H. cribripennis*, sp. nov. Modice elongatus, postice parum dilatatus; subnitidus; ferrugineus; supra pilis brevibus adpressis vestitus; clypeo crebre subtilius ruguloso, antice truncato, oculos in exteriorem partem haud superanti; labro clypei planum superanti; capite antice (a tergo oblique viso) tripliciter convexo (parte mediana quam laterales haud multo angustiori); fronte subgrosse vix crebre punctulata; hac clypeoque ut plana vix disparia visis; antennis 8-articulatis, articulo 3<sup>o</sup> quam 2<sup>us</sup> sat multo breviori; prothorace quam longiori ut 7 ad 4 latiori, antice minus angustato, vix crebre nec profunde punctulato (puncturis circiter 20 in segmenti longitudine), lateribus (superne visis) leviter arcuatis, angulis anticis parum productis posticis (superne visis) rectis vix retrorsum productis, basi leviter bisinuata, margine basali sat æquali; elytris confertim subtiliter punctulatis (trans elytron puncturis circiter 45); pygidio sat fortiter sat crebre punctulato; coxis posticis quam metasternum sat brevioribus, quam segmentum ventrale 2<sup>um</sup> sat longioribus; tarsorum posticorum articulo basali quam 2<sup>us</sup> parum breviori quam 3<sup>us</sup> paullo longiori; unguiculis appendiculatis, parte apicali parva. Long.,  $3\frac{1}{2}$  l.; lat.,  $1\frac{3}{5}$  l.

This is an easily recognizable species, the feebly impressed puncturation of its pronotum and elytra with the punctures of the latter very much finer and closer than of the former being unusual in *Heteronyx*. It is a member of my Group VI. (Trans. Roy. Soc., S.A., 1910, pp. 149, etc.), and in the tabulation of species of that group falls beside *cygneus*, Blackb., on account of its clypeus not extending laterally beyond the contour of the eyes. The two may be thus distinguished:—

- H. Punctures of pronotum deeply impressed  
and sparse (about 15 in the length) *cygneus*, Blackb.  
HH. Punctures of pronotum much smaller,  
fainter, and closer ... .. *cribripennis*, Blackb.

South Australia (Cleve); taken by Mr. J. S. Blackburn.

- H. johannis*, sp. nov. Ovatus, sat brevis; parum nitidus; ferrugineus, elytris nigro-fuscis; supra pilis adpressis minus brevibus cinereis vestitus; clypeo subtilius minus crebre ruguloso, antice subtruncato, oculos in exteriorem partem haud superanti; labro clypei planum superanti; antice haud perpendiculari; capite antice (a tergo oblique viso) tripliciter convexo (parte mediana quam laterales fere duplo angustiori); fronte crebre sat subtiliter punctulata; hac clypeoque fere planum continuum efficientibus; antennis 9-articulatis; prothorace quam longiori ut 9 ad 5 latiori, antice minus angustato, supra subtiliter sat crebre nec profunde punctulato (puncturis circiter 26 in segmenti longitudine), lateribus (superne visis) sat rotundatis, angulis anticis manifeste productis posticis (superne visis) rotundato-obtusis, basi vix bisinuata, margine basali sat aequali; elytris subtiliter confertim nec profunde punctulatis (trans elytron puncturis circiter 55), obsolete striatis; pygidio minus crebre minus subtiliter nec profunde punctulato; coxis posticis quam metasternum haud brevioribus, quam segmentum ventrale 2<sup>um</sup> multo longioribus; tarsorum posticorum articulo basali 2<sup>o</sup> longitudine sat aequali; unguiculis posticis elongatis appendiculatis, parte basali quam apicalis haud longiori. Long., 4 l.; lat., 2½ l.

The colouring of this species (entirely ferruginous except black-brown elytra) if constant distinguishes it from nearly all other *Heteronyces*. It is a member of my Group VIII., and in the tabulation of the species of that group (Trans. Roy. Soc., S.A., 1910, pp. 187, etc.) falls beside *waterhousei*, Blackb., from which it differs (besides colour) by, *inter alia*, labrum (as in *H. xanthotrichus*, Blackb.) not hav-

ing the front face perpendicular, middle lobe of trilobed outline of head much narrower, form shorter and wider, dorsal surface notably less nitid, prothorax more transverse, with sides more rounded, elytra quite visibly striate, basal two joints of hind tarsi scarcely different in length. It is to be noted that the punctures of the pygidium are very notably less close and less fine than those of the rest of the dorsal surface.

South Australia (Cleve); taken by my son, Mr. John S. Blackburn.

- . *H. difficilis*, sp. nov. Sat elongatus, postice vix dilatatus; minus nitidus; ferrugineus; supra pilis adpressis brevibus vestitus; clypeo crebre subtilius ruguloso, antice emarginato, oculos in exteriorem partem haud superanti; labro clypei planum superanti; capite antice (a tergo oblique viso) tripliciter convexo (parte mediana quam laterales duplo angustiori); fronte subtilius sat crebre punctulata; hac clypeoque ut plana minus disparia visis; antennis 9-articulatis; prothorace quam longiori ut 9 ad 5 latiori, antice modice angustato, supra crebre subtiliter punctulato (puncturis circiter 35 in segmenti longitudine), lateribus (superne visis) sat arcuatis, angulis anticis sat acutis modice productis posticis (superne visis) obtusis, basi leviter bisinuata, margine basali sat æquali; elytris confertim subtiliter punctulatis (trans elytron puncturis circiter 50), obsolete substriatis; pygidio nitido piloso sparsius punctulato; coxis posticis quam metasternum vix brevioribus quam segmentum ventrale 2<sup>um</sup> multo longioribus; tarsorum posticorum articulo basali quam 2<sup>us</sup> multo (quam 3<sup>us</sup> parum) breviori; unguiculis posticis elongatis, appendiculatis, parte basali quam apicalis vix longiori. Long., 5 l.; lat., 2½ l.

A member of my Group VIII. In the tabulation of species of that group (Trans. Roy. Soc., S.A., 1910, pp. 187, etc.) stands next to *H. sculptus*, Blackb. Compared with *sculptus* the present species (which is really very close to it) is notably smaller, with sides of prothorax more rounded, punctuation of pronotum and elytra distinctly a little less extremely fine, pygidium much more nitid and considerably less closely punctulate, etc. This insect is also near *H. waterhousei*, Blackb., and *H. johannis*, Blackb., differing from the former by, *inter alia*, its substriate elytra; from the latter by, *inter alia*, very different colouring and conspicuously convex subsutural interstice; and from both by larger size and narrower form.

South Australia (Cleve); taken by Mr. J. S. Blackburn.

## STETHASPIS.

Since I dealt with this genus (Trans. Roy. Soc., S.A., 1911) I have obtained specimens which enable me to supplement my former notes with some important additions. Mr. Carter has sent me a male of each of the two species that I regard as *S. eucalypti*, Boisd., and *metrosideri*, Burm., and of which I had previously known only the females. *Metrosideri* was described on a female. The examination of these males is conclusive as to the distinctness of the species which I have regarded as *eucalypti*, Boisd., from the species that I have called *metrosideri*. The male sent by Mr. Carter of the former species has an antennal flabellum of 6 laminae, while in the flabellum of the other male the laminae are only 5, and so there can remain no doubt that the species I have considered to be *metrosideri* and *eucalypti* are distinct species. In my former memoir (*loc. cit.*) I expressed a doubt about my identification of *metrosideri*, and the examination of the male does not throw fresh light directly upon the point. It, however, brings out the fact that the absence of erect hairs on the ventral segments, which Burmeister regarded as a specific character, is only sexual, as this male has erect hairs like those of *eucalypti*. Indirectly, however, the study of this male tends to confirm my identification, inasmuch as the legs of the specimen in question are green, and that character (together with the presence of erect hairs on its ventral segments) removes practically all doubt about the identification of it with *S. latus*, Blanch.—discussed in my former notes—and settles the point, I think, that *latus* and *metrosideri* are, as conjectured in my former paper, one species—the latter being the female. The name *latus* has priority. It should be added that the green colouring of the legs of the male is probably not a sexual character, since it appears also in a female of *eucalypti* sent by Mr. Carter with the male. The male *latus* has in its elytral striae the double rows of short white setae which my former paper noted as present in the female, and that character is certainly a valid specific distinction from *eucalypti*: also the punctures in the elytral striae are much closer in *latus* than in *eucalypti*, and the external teeth on the front tibiae of the male are much stronger in the former than in the latter. *Latus* and *eucalypti* differ from all the other *Stethaspides* known to me in their much longer metasternal process.

*S. sternalis*, sp. nov., Mas. Supra viridis, capite pronoto elytrisque plus minusve testaceo-marginatis, sternis obscure ferrugineis, abdomine pygidioque obscuris, antennis palpis pedibusque rufis; pilis erectis sat elongatis albidis (in fronte pygidio femoribus et segmentis

ventralibus sat crebre, in pronoto elytrisque sparsissime, in sternis dense) vestitus; capite fortiter sat crebre punctulato, clypeo antice truncato-vix-emarginato subtiliter marginato nec reflexo; antennis 9-articulatis, articulo 3<sup>o</sup> valde elongato, flabello 6-laminato, laminis quam antennarum articuli ceteri conjuncti parum brevioribus, lamina basali quam ceteræ parum breviori; prothorace quam longiori ut 10 ad 5 $\frac{3}{4}$  latiori, antice valde angustato, supra sparsim (ad latera magis crebre) punctulato, lateribus pone medium sinuatis, angulis anticis obtusis posticis acute rectis, basi piloso-fimbriata fortiter bisinuata; scutello fere ut pronotum punctulato; elytris, fere ut *S. eucalypti*, Boisd., fortiter punctulato-striatis, puncturis setæ albidæ perbreves uniseriatim ferentibus, interstitiis convexis lævibus; pygidio crebre subtilius (quam *S. eucalypti* multo minus subtiliter) aspero; processu sternali nullo, sterno antice declivi-carinato; tibiis anticis extus modice bidentatis (quam *S. eucalypti* magis, quam *S. læti*, Blanch., minus, fortiter); tarsis elongatis sat gracilibus; segmentis ventralibus minus crebre minus subtiliter punctulatis.

Fem. latet. Long., 10 $\frac{1}{2}$  l.; lat., 5 $\frac{1}{2}$  l.

Five specimens (all males) of this insect occurred to me on the Buffalo and other mountains of the Victorian Alps, at a high elevation. The species resembles *S. eucalypti*, Boisd., of same sex, in its 6-laminate antennal flabellum (the laminæ, however, are distinctly longer, especially the basal one in proportion to the others), but differs strongly in the absence of a sternal process; the sternum ending at the level of the intermediate coxæ as an obtuse carina vertically truncate. Other notable distinctions consist in the clypeus not reflexed in front, the much less fine asperity of the pygidium, the much less fine and less close puncturation of the ventral segments, the greater length and less robustness of the tarsi, the evidently more strongly developed external teeth of the front tibiæ. From the insect mentioned above as *lætus*, Blanch., this species differs by, *inter alia multa*, the 6-laminate antennal male flabellum and the absence of a sternal process; from *S. monticola*, Blackb., by the male antennal flabellum with 6 long laminæ, the pronotum non-pilose and thinly punctulate, etc.; from *piliger*, Blanch., and *nigrescens*, Blanch., by, *inter alia multa*, its very much greater size. It should, perhaps, be added that I have taken a *Stethaspis* (female only) in the Dividing Range of Victoria which may possibly be the female of this species, but since its sternal process is distinctly less obsolete than in the males from the Alps (not, apparently, a sexual character in other



species), and there are other minor differences, it is more likely to be the female of another species of which I have not seen the male.

Victorian Alps.

The additional material that is now before me enables me to supply a much more satisfactory statement in tabular form than my previous paper contained of the distinctive characters of the known Australian *Stethaspides*, as follows:—

- |     |  |                            |
|-----|--|----------------------------|
| A.  | Sternal process elongate and acuminate, very strongly passing the middle coxæ.   |                            |
| B.  | Punctures of elytral striæ small and close, and bearing white setæ in a double row. Flabellum of male antennæ with only 5 laminæ ...                   | lætus, <i>Blanch.</i>      |
| BB. | Punctures of elytral striæ notably larger and less close; setæ very sparse and not in double rows. Flabellum of male antennæ with 6 laminæ ...         | eucalypti, <i>Boisd.</i>   |
| AA. | Sternal process scarcely, or not, passing the middle coxæ.   |                            |
| B.  | Pronotum non-pilose (except a few hairs about front and base) and thinly and finely punctulate. Flabellum of male antennæ with 6 long laminæ ...       | sternalis, <i>Blackb.</i>  |
| BB. | Pronotum entirely pilose.  |                            |
| C.  | Pygidium confluently asperate. Colour not black.   |                            |
| D.  | Punctures of elytral striæ 1-3 similar. Flabellum of male antennæ with only 5 long laminæ <sup>(1)</sup> ...   | monticola, <i>Blackb.</i>  |
| DD. | Punctures of 2nd elytral stria notably larger and sparser than of 1 and 3. Flabellum of male antennæ with 6 long laminæ ...                            | piliger, <i>Blanch.</i>    |
| CC. | Pygidium not nearly confluently sculptured. Colour black. Flabellum of male antennæ with 6 very long laminæ (much longer than joints 1-3 together) ... | nigrescens, <i>Blanch.</i> |

#### RHOPÆA.

In the tabulated statement of the distinctive characters of species of this genus (*Trans. Roy. Soc., S.A., 1911, p. 189*) there is the following error to be noted, *viz.*, against the letter "C." the word "twice" is omitted. The lines should

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<sup>(1)</sup> Joint 4 of the antennæ is scarcely more than dentiform within.

read "Joint 3 of antennæ not longer than *twice* its width at the apex," corresponding to "Joint 3 of antennæ much more than twice as long as wide" against "CC."

#### PARALEPIDIOTA.

*P. lepidoptera*, sp. nov., Mas. Sat elongata, postice parum dilatata; rufotestacea, antennarum flabello dilutiori; supra squamis parvis albidis vestita, his in capite pronoto pedibusque sparsis sat crassis in elytris sparsis subtilibus magis setiformibus in pygidio subtilibus sat confertis; sternis et meso-thorace pallide fulvo-villosis; segmentis ventralibus squamis minimis albidis sat confertim vestitis; clypeo latera versus grosse sparsim punctulato, alte reflexo, antice emarginato; fronte in parte postica crebre minus grosse punctulata; palporum maxillarium articulis 2<sup>o</sup> modico 3<sup>o</sup> brevi 4<sup>o</sup> quam 2<sup>us</sup> 3<sup>us</sup> que conjuncti nonnihil longiori, hoc supra late profunde excavato; antennis 10-articulatis, articulis 3<sup>o</sup> quam 2<sup>us</sup> sat longiori 4<sup>o</sup> brevi intus spiniformi 5<sup>o</sup>-10<sup>o</sup> fortiter laminiformibus (lamina basali quam ceteræ paullo breviori; prothorace quam longiori ut 5 ad 3 latiori, antice sat fortiter angustato, supra sparsim subfortiter punctulato, lateribus fortiter crenulatis mox pone medium subangulatis, angulis posticis acute rectis, basi subtiliter marginata; scutello sat crebre minus fortiter punctulato; elytris longitudinaliter leviter costulatis, sat crebre vix fortiter punctulatis; pygidio crebre subtilius punctulato; tibiis anticis extus fortiter tridentatis, posticis transversim vix manifeste carinatis; tarsis posticis quam tibiæ paullo brevioribus; unguiculis magnis, intus pone medium dente parvo instructis; segmento ventrali apicali postice late emarginato. Long., 11 l.; lat., 5½ l.

Feminae palpis maxillaribus quam maris brevioribus, antennarum articulo 4<sup>o</sup> haud spiniformi flabello multo breviori, prothorace ad latera dilatato vix angulatum, elytris minus concinne punctulatis, tarsis brevioribus, segmento ventrali, apicali haud emarginato. Long., 12 l.; lat., 5¾ l.

In this species the prothorax is somewhat conspicuously small as compared with the elytra, and is very strongly convex. The lamellæ of the antennal flabellum of the male are fully as long as joints 1-4 together. A thick fringe of long fulvous hairs protrudes over the base of the elytra from beneath the basal margin of the pronotum. There is no apparent sternal projection behind the front coxæ. I am fairly certain that the male and female described are specifically identical, since the only differences I find between

them are in respect of obviously sexual characters, with the exception of the slight difference in the lateral curve of the prothorax, which is perhaps a little puzzling; but the general agreement in non-sexual characters is too close to allow of their being considered two species. The male was given to me by Mr. Lea, labelled "Cairns"; the female by Mr. Perkins, labelled "N. Queensland."

North Queensland.

#### LEPIDODERMA.

I have recently procured a type-written copy of Brenske's treatise on this genus referred to in my previous paper (Trans. Roy. Soc., S.A., 1911, p. 197), and find that its author had not extended the limits of the genus to include species that, in my opinion, should not be placed there. It was his inclusion of *Antitrogus* in *Lepidiota* which led to the thought that a similar extension of *Lepidoderma* might possibly bring into the number of the new species he described under that name the insect for which I founded the genus *Paralepidiota*. I have now given to it a specific name and description (*vide supra*). As Brenske's treatise occurs in a publication of the *Societas Entomologica*, which, I am informed, is out of print, a brief *resumé* of its contents will probably be useful to Australian workers on the *Coleoptera*. The treatise is, on the whole, rather disappointing for the reason that, although it contains a lengthy note on the relation of *Lepidoderma* to the *Leucopholides*, there is no reference in it to the spurs of the hind tibiae, which in his former paper on the *Leucopholides* discussed by me (*loc. cit.*) Brenske regarded as of value higher than even generic; and that omission leaves one in doubt whether he had perhaps come to the conclusion expressed by me that the importance he gave in his earlier paper to the character in question ought not to be accepted without hesitation.

In his general remarks on *Lepidoderma* Brenske expresses the opinion which I also expressed (*loc. cit.*), that the ordinarily accepted subdivision of the "True Melolonthides" cannot be satisfactorily applied to the Australian genera, and he states that although *Lepidoderma* under the ordinary classification would fall among the *Polyphyllides*, he thinks its true place is among the *Leucopholides* (where I placed it). He does not refer to the clypeal character which determined me in the matter, but bases his opinion on the *facies* and on the build of some of the mouth characters. He also mentions a character in *Lepidoderma* as distinguishing it from other *Melolonthid* genera known to him in the hind femora being

narrowed in the basal part (not, as in other genera, of evenly curved outline). I had not observed that character myself: though it is not very strongly marked, the note of its presence is certainly a valuable contribution to the diagnosis of the genus. Brenske finds a reason for the inapplicability to Australian genera of the ordinary classification in the theory that some primitive forms which have disappeared elsewhere have survived in Australia.

Brenske then proceeds to add three new species to the genus, but does not give a formal description of them, merely placing them in a tabular statement of the distinctive characters of the *Lepidodermata* and stating their size and habitat. The habitat of only one of them (*waterhousei*, from Queensland) is exactly known, *lansbergei* being attributed to "Australia" and *glaber* apparently being of altogether doubtful habitat ("Cornwallis Island?"). Without a formal description it is, of course, impossible to identify these species confidently except by comparison with the types, but I have in my collection two species of the genus (both from Queensland) which agree in respect of the characters mentioned in the tabulation with *waterhousei* and *glaber*. As Brenske's memoir is not procurable I subjoin an extract from his tabulation (which includes species from New Guinea and Arou) showing how he differentiates Australian species:—

- |  |                             |
|--|-----------------------------|
| A. Pronotum smooth, with small dispersed punctures. Elytra likewise nitid, with diffused shallow punctures in which are white scales. Long., 28-31 mm. ... ..  | <i>glaber, Brenske</i>      |
| AA. Pronotum smooth, with dispersed punctures larger. Elytra closely punctured with numerous raised smooth wrinkles interspersed. The scales are small, not covering the surface. Long., 24 mm. ... ..   | <i>waterhousei, Brenske</i> |
| AAA. Pronotum closely punctulate, with smooth raised spaces intermingled.  |                             |
| B. Elytra very closely punctulate, without coarser punctures intermingled, but with some smooth spaces behind the middle. Scales very close. Long., 27-30 mm. ... ..   | <i>albohirtum, Waterh.</i>  |
| BB. Elytra very closely and finely punctured with numerous coarser punctures intermingled, with dispersed feeble wrinkles, and a spot on either side behind the middle. The scales are strong but not covering the surface. The pygidium is coarsely wrinkled, sparsely scaled. Long., 32 mm. ... .. | <i>lansbergei, Brenske</i>  |

## LEPIDIOTA.

*L. bovilli*, sp. nov., Mas. (?) Sat elongata, postice modice dilatata; obscure rufa, antennis tarsis elytrisque plus minusve dilutioribus; squamis albidis, his supra parvis nonnihil setiformibus subæqualiter vix crebre dispositis (in pygidio magis crebre, apice glabro excepto), subtus paullo majoribus magis crebre dispositis, vestita; metasterno haud piloso; capite crebre fortiter ruguloso, clypeo sat alte reflexo antice sat fortiter emarginato; palporum maxillarium articulo apicali sat elongata subcylindrico, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> quamque 4<sup>us</sup> manifeste longiori, flabelli laminis quam antennarum articulus basalis subbrevioribus; prothorace quam longiori ut 7 ad 4 latiori, antice haud marginato parum angustato, supra sat crebre (latera versus creberrime) sat fortiter punctulato, lateribus crenulatis paullo pone medium fortiter dilatato-rotundatis, angulis anticis parum productis obtuse rectis posticis (superne visis) acute rectis, basi haud marginata manifeste bisinuata; scutello fere ut pronotum punctulato; elytris crebre sat fortiter nonnihil rugulose punctulatis, costulis bene definitis instructis; pygidio crebre minus fortiter punctulato, ad apicem subito declivi in hac parte nitido nec squamifero tibiis anticis extus fortiter tridentatis; tibiis posticarum calcaribus sat angustis modico elongatis; segmento ventrali apicali transversim leviter impresso; tarsis posticis quam tibiis sat brevioribus.

Femina minus angustata, postice magis dilatata, calcaribus posticis magis dilatatis, pronoti disco (exempli typici) paullo minus crebre magis grosse punctulato. Long., 8½ l.; lat., 3¾-4 l.

The sexual characters in this species are very slight. The stronger and less close puncturation of the pronotum of the female may be only an individual variation. In general appearance *L. bovilli* resembles *L. rothei*, Blackb., and *koebeleri*, Blackb., differing from them both, however, by, *inter alia*, its pronotum scarcely narrowed in front and its more strongly emarginate clypeus.

Northern Territory (Port Darwin); sent by the late Dr. Bovill.

*L. koebeleri*, sp. nov., Mas. Minus elongata, postice sat dilatata; obscure rufa, antennis dilutioribus; sat nitida; squamis albidis, his supra parvis nonnihil setiformibus vix crebre sat æqualiter dispositis, subtus paullo majoribus magis crebre dispositis, vestita; metasterno haud piloso;

capite inæqualiter subgrosse punctulato, clypeo minus fortiter reflexo antice leviter emarginato; palporum maxillarium articulo apicali minus elongato subovali, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> et quam 4<sup>us</sup> nonnihil longiori, flabelli laminis quam antennarum articulus basalis vix longioribus; prothorace quam longiori ut 7 ad 4½ latiori, antice haud marginato leviter angustato, supra subinæqualiter sat crebre sat fortiter (latera versus confertim) punctulato, lateribus vix crenulatis postice vix marginatis paullo pone medium fortiter dilatato-rotundatis, angulis anticis minus productis sat rectis posticis (superne visis) acute rectis, basi subtilissime vix perspicue marginata leviter bisinuata; scutello fere ut pronotum punctulato; elytris nisi circa scutellum magis crebre sat rugulose punctulatis manifeste leviter costulatis; pygidio subtilius sat crebre punctulato; tibiis anticis extus sat fortiter tridentatis; tibiæ posticarum calcaribus angustis modice elongatis; segmento ventrali apicali sat æquali; tarsis posticis quam tibiæ sat brevioribus. Long., 7½ l.; lat., 4½ l.

North Queensland: sent to me by Mr. Koebele.

*L. rubrior*, sp. nov., Fem. Minus elongata, postice sat dilatata; obscure rubra, pedibus plus minusve piceis; sat nitida; supra squamis minutis subsetiformibus pallide fulvis sparsim (in pygidio magis crebre), subtus squamis manifeste majoribus vix setiformibus vix fulvescentibus (in medio abdomine et in pedibus sparsim, alibi crebre) vestita, metasterno haud piloso; capite crebre profunde subgrosse ruguloso, clypeo sat fortiter reflexo, antice profunde emarginato; palporum maxillarium articulo apicali subcylindrico sat elongato, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> et quam 4<sup>us</sup> manifeste longiori, flabelli laminis antennarum articulo basali longitudine sat æqualibus; prothorace quam longiori ut 7 ad 4½ latiori, antice marginato sat fortiter angustato, longitudinaliter inæqualiter in medio lævi subelevato, antice fere ut caput sed postice minus crebre punctulato, lateribus fortiter crenulatis paullo pone medium sat fortiter dilatato-rotundatis antice quam postice manifeste magis alte reflexis, angulis anticis sat acutis sat productis posticis (superne visis) obtusis fere rectis, basi marginata vix bisinuata; scutello crebre sat fortiter punctulato; elytris manifeste costulatis (costula externa postice quam ceteræ multo magis perspicua), sat crebre sat rugulose quam pronotum manifeste subtilius punctulatis; pygidio sat crebre subrugulose sat fortiter punctulato, apice emarginato tibiis anticis extus fortiter

tridentatis; tibiæ posticarum calcaribus sat brevibus sat dilatatis; segmento ventrali apicali postice late transversim impresso; tarsis posticis quam tibiæ sat brevioribus. Long.,  $8\frac{1}{2}$  l.; lat.,  $4\frac{1}{2}$  l.

This species is easily recognizable by the characters cited in the tabulation.

Queensland. I have no note of the exact locality.

*L. suavior*, sp. nov., Mas. Minus elongata, postice sat dilatata; castanea, antennarum media parte, palpis, pedibusque plus minusve obscurioribus; squamis ovalibus albidis crebre vestita, squamis in capite elytris pygidioque quam alibi manifeste minoribus; metasterno sparsim piloso; supra crebre minus fortiter punctulata; clypeo in media parte lævi, antice minus fortiter emarginato, modice reflexo; palporum maxillarium articulo apicali breviter late ovali, supra fortiter excavato; antennarum articulo 3<sup>o</sup> 2<sup>o</sup> sat æquali quam 4<sup>us</sup> manifeste longiori, flabelli laminis quam antennarum articulus basalis sat longioribus; prothorace quam longiori ut 9 ad 5 latiori, antice sat angustato haud marginato, longitudinaliter inæqualiter in medio lævi subelevato, lateribus leviter crenulatis sat longe pone medium modice dilatato-rotundatis antice quam postice vix magis alte reflexis, angulis omnibus rotundato-obtusis, basi leviter bisinuata haud marginata; scutello in media parte longitudinaliter lævi; elytris subtiliter parum manifeste costulatis; tibiis anticis extus fortiter tridentatis; tibiæ posticarum calcaribus elongatis modice angustis; segmento ventrali apicali æquali; tarsis posticis tibiis longitudine sat æqualibus.

**Feminæ** antennarum flabello quam maris sat breviori; calcaribus posticis magis dilatatis; segmento ventrali apicali antice foveis duabus profundis impresso; corpore subtus (exempli typici) minus perspicue squamifero; pygidio apicem versus nitido sparsim punctulato nec squamifero. Long., 10 l.; lat.,  $5\frac{1}{2}$  l.

The punctuation and scaling of this species is very even, in the sense that there is very little difference in them in the different parts of the insect, beyond that the scales of the dorsal surface are quite evidently a little smaller than those of the ventral segments, legs, etc.

North-West Australia (Roebuck Bay).

*L. perkinsi*, sp. nov., Mas. Sat elongata, sat parallela; rufo-castanea, antennis dilutioribus; squamis parvis rotundis albidis vestita [in capite pronoto et elytris minus crebre, in pygidio magis crebre, in corpore subtus confertim, in

pedibus (in his squamis paullo majoribus) sparsim]; metasterno sparsim fulvo-piloso: capite crebrius minus fortiter punctulato: clypeo in media parte lævi, modice reflexo, antice sat fortiter emarginato: palporum maxillarium articulo apicali subcylindrico, quam latiori triplo longiori; supra haud excavato; antennarum articulis 2<sup>o</sup>-4<sup>o</sup> longitudine sat æqualibus, flabelli laminis antennarum articulo basali longitudine sat æqualibus; prothorace quam longiori ut 9 ad 5 latiori, antice subtiliter marginato leviter angustato, supra crebrius subfortiter punctulato, lateribus crenulatis mox pone medium fortiter dilatato-rotundatis antice quam postice vix magis alte reflexis, angulis anticis obtusis nullo modo prominulis posticis (superne visis) acute rectis, basi minus fortiter bisinuata haud continuatim marginata: scutello et elytris fere ut pronotum punctulatis (his suturam versus paullo magis crebre et magis rugulose), elytrorum costulis bene definitis: pygidio crebrius subtilius nonnihil acervatim punctulato; tibiis anticis extus minus fortiter tridentatis (dente summo parum definito): tibiaram posticarum calcaribus angustis sat elongatis, subtus pernitidis; segmento ventrali apicali postice foveatim leviter impresso et ad apicem in medio anguste leviter emarginato; tarsis posticis quam tibiarum parum brevioribus.

**Feminae** antennarum flabello quam maris sat breviori: calcaribus posticis dilatatis, subtus opacis ad apicem leviter concavis; segmento ventrali apicali postice profunde semicirculariter late impresso; corpore subtus (exempli typici) vix perspicue squamifero. Long., 10-11 l.; lat., 4½-4¾ l.

Differs from all the preceding by the raised edging of its pronotum being (where it margins the front of the front angles) an extremely fine line not raised above the general surface, together with those angles being quite blunt and not directed forward.

North Queensland: Cairns (Mr. Lea—his No. 8900—and Mr. Perkins).

*L. leai*, sp. nov., Mas. Minus elongata, postice leviter dilatata; minus nitida: picea, plus minusve rufescens, antennarum et femoribus dilutioribus flabello dilutiori; squamis sat parvis albidis (nonnullis ochraceis intermixtis) crebre vestita (his in pygidio minoribus, in pedibus sparsioribus, in elytris oblongis setiformibus); supra crebre minus fortiter (pygidio subtilius) punctulata; metasterno sparsim fulvo-piloso; clypeo leviter reflexo, antice sat fortiter emarginato; palporum maxil-



larium articulo apicali sat breviter ovali, supra sat fortiter excavato; antennarum articulo 3<sup>o</sup> basali longitudine sat æquali quam 4<sup>us</sup> paullo longiori, flabelli laminis quam antennarum articulus basalis vix brevioribus; prothorace quam longiori ut 11 ad 6½ latiori, antice haud marginato parum angustato, lateribus crenulatis sat longe pone medium leviter dilatato-rotundatis antice quam postice paullo magis alte reflexis, angulis anticis sat rectis posticis (superne visis) acutis retrorsum directis, basi modice bisinuata haud marginata; elytris vix perspicue costulatis; tibiis anticis extus minus fortiter tridentatis; tibiarum posticarum calcaribus angustis elongatis; segmento ventrali apicali æquali; tarsis posticis quam tibiæ parum brevioribus.

Fem. latet. Long., 12 l.; lat., 5½ l.

The presence of ochraceous scales mixed with the white ones gives this species a very mottled appearance suggestive of the species that I take to be *squamulata*, Waterh.; but in the latter that appearance is even more conspicuous, owing to the scales being notably larger, of rounded form, and those of ochraceous colour more numerous (especially on the elytra). On the ventral segments, however, the ochraceous scales are almost wanting in the latter, while in *L. leai* the lateral parts are almost entirely clothed with them.

Western Australia.

*L. frenchi*, sp. nov., Mas. Sat elongata, sat parallela; obscure ferruginea, antennis palpisque dilutioribus; leviter pruinosa; squamis minutis albidis vestita [in capite pronoto et elytris sparsius, in pygidio magis crebre, in corpore subtus creberrime, in pedibus (in his squamæ paullo majoribus) sparsim]; metasterno coxisque posticis fulvo-pilosis; capite crebre fortiter punctulato, clypeo leviter reflexo, antice sat fortiter emarginato; palporum maxillarium articulo apicali subcylindrico, quam latiori fere triplo longiori, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> et quam 4<sup>us</sup> nonnihil longiori, flabelli laminis quam antennarum articulus basalis vix longioribus; prothorace quam longiori ut 11 ad 6½ latiori, antice marginato leviter angustato, supra subtiliter sat crebre nonnihil acervatim punctulato, lateribus crenulatis mox pone medium sat fortiter dilatato-rotundatis antice quam postice multo magis alte reflexis, angulis anticis sat rectis posticis (superne visis) subacutis nonnihil retrorsum directis, basi modice bisinuata haud continuatim marginata; scutello et elytris fere ut pronotum punctulatis, his perspicue costulatis; pygidio crebre subtilissime punctulato; propygidio difformi; tibiis

anticis extus sat fortiter tridentatis; tibiæ posticarum calcaribus elongatis, minus angustis; segmento ventrali apicali æquali; tarsis posticis quam tibiæ sat brevioribus. Long., 13 l.; lat.,  $5\frac{3}{8}$  l.

Femina quam mas minus parallela, magis lata; illius antennarum flabello vix breviori, tarsis robustioribus et paullo brevioribus; pygidio postice in medio tuberculo parvo instructo et ad apicem dente minuto armato; tibiæ posticarum calcaribus brevioribus magis dilatatis, calcare longiori apicem versus subtus concavo.

This species differs from all other *Lepidiotæ* known to me by the structure of its propygidium. Apart from that character it is near *L. negatoria*, Blackb., but differing from it by, *inter alia*, notably closer and finer puncturation of dorsal surface (pygidium very much more, instead of less, closely punctured than the elytra); prothorax much less narrowed in front with sides as viewed from above much less strongly arched. Differs from *caudata*, Blackb., and *deceptrix*, Blackb., by base of pronotum not continuously margined, and, *inter alia*, from the former by very much finer sculpture of dorsal surface, and from the latter by punctures of pronotum very much finer, punctures of elytra much closer, prothorax notably wider in front and having hind angles much less acute. The structure of the propygidium is very peculiar. That segment is very strongly and widely emarginate in the middle and is on two planes; its front part is not punctured and the hind edge of this front part is more or less reflexed and defined; behind the hind edge of the front part the segment becomes declivous—almost vertical—and this narrow declivous hind piece is punctured and furnished with very fine whitish scales.

Queensland (Cairns); male from Mr. French; female from Mr. Lea (his No. 13011).

*L. deceptrix*, sp. nov., Fem. Robusta, postice manifeste dilatata; rufo-ferruginea; supra squamis minutis albidis sparsim vestita; subtus squamis minutis albidis vestita (in media parte sparsim, latera versus confertim); metasterno et coxis posticis pilis elongatis pallide fulvis dense vestitis; capite crebre subfortiter punctulato; clypeo sat alte reflexo, antice sat fortiter emarginato; palporum maxillarium articulo apicali subcylindrico, quam latiori triplo longiori, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> manifeste (quam 4<sup>us</sup> haud) longiori, flabelli laminis quam antennarum articulus basalis vix longioribus; prothorace quam longiori ut 23 ad 13 latiori, antice marginato sat fortiter angustato, supra minus

crebre sat fortiter nonnihil acervatim punctulato, lateribus crenulatis mox pone medium fortiter dilatato-rotundatis antice quam postice multo magis reflexis, angulis anticis obtuse rectis posticis (superne visis) fortiter acutis divergentibus, basi marginata sat fortiter bisinuata; scutello fere ut pronotum punctulato; elytris sparsim subtilius punctulatis, obsolete costulatis; pygidio sparsius subtiliter punctulato, ad apicem in medio dentiformi; tibiis anticis extus sat fortiter tridentatis; tibiis posticarum calcaribus modice dilatatis opacis; segmento ventrali apicali vix impresso. Long., 12 l.; lat.,  $6\frac{3}{4}$  l.

This is the species that I formerly regarded as the female of *L. caudata*, Blackb. (Trans. Roy. Soc., S.A., 1890, p. 85). The subsequent examination of more numerous specimens of *Lepidiota* has satisfied me that the type of *caudata* (which I regarded as a male) is a female, and consequently that the differences which I regarded as sexual are specific.

Queensland.

*L. caudata*, Blackb. Sat elongata, postice minus dilatata; piceo-ferruginea, nonnihil iridescens; supra squamis minutis albidis sparsim vestita; subtus squamis minutis albidis vestita (in media parte et in pedibus sparsim, latera versus confertim); metasterno pilis elongatis pallide fulvis dense vestitis; clypeo crebre fortiter punctulato, minus alte reflexo, antice sat fortiter emarginato; fronte subgrosse punctulato; palporum maxillarium articulo apicali subcylindrico, quam latiori fere triplo longiori, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> manifeste (quam 4<sup>us</sup> nonnihil) longiori, flabelli laminis antennarum articulo basali longitudine sat æqualibus; prothorace quam longiori ut 12 ad 7 latiori, antice minus fortiter angustato marginato, supra minus crebre sat fortiter vix acervatim punctulato, lateribus crenulatis mox pone medium sat fortiter dilatato-rotundatis antice quam postice multo magis alte reflexis, angulis anticis obtuse rectis posticis (superne visis) sat acute rectis nec divergentibus, basi marginata sat fortiter bisinuata; scutello fere ut pronotum punctulato; elytris sparsius minus subtiliter punctulatis, sat manifeste costulatis; pygidio crebre rugulose nec grosse punctulato, ad apicem in medio dentiformi; tibiis anticis extus sat fortiter tridentatis; tibiis posticarum calcaribus modice dilatatis minus nitidis; segmento ventrali apicali pone apicem profunde semicirculariter impresso; tarsis posticis quam tibiis harum tertia parte breviori. Long., 12 l.; lat.,  $6\frac{1}{4}$  l.

Maris antennarum flabello quam feminae vix longiori; coxis posticis pilosis; tibiaram posticarum calcaribus nitidis sat angustis; pygidio quam feminae paullo minus crebre punctulato, postice inermi; segmento ventrali apicali sat æquali; forma magis angusta magis parallela. Long., 12 l.; lat.,  $5\frac{3}{4}$  l.

When I described this species I erroneously believed the type to be a male and *L. deceptrix* to be its female. There is now no doubt of their being females of two species. I have therefore redescribed them both. A comparison of the descriptions will indicate numerous slight differences, but the most conspicuous differences are: the hind angles of prothorax divergent in *deceptrix*, together with, in that species, dorsal surface non-iridescent and of lighter colour, hind coxæ distinctly pilose in female, and elytra and pygidium distinctly more finely punctulate. The male described above was given to me some time ago by Mr. Lea (his No. 5535), and is certainly the male of this species (Brenske's notes on the spurs of the hind tibiæ being assumed correct).

Queensland.

*L. townsvillensis*, sp. nov., Mas. Modice elongata, postice minus dilatata; rubro-ferruginea; supra (pygidio excepta) haud squamosa; subtus et in pygidio squamis minutis albidis vestita (his in pygidio sparsis, in corpore subtus in media parte sparsissimis latera versus confertis; sat nitida; metasterno coxisque posticis fulvo-pilosis; capite grosse punctulato; clypeo sat alte reflexo, antice leviter emarginato; palporum maxillarium articulo apicali ovali, quam latiori circiter duplo longiori, supra profunde excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> vix quam 4<sup>us</sup> haud longiori, flabelli laminis quam antennarum articulus basalis duplo longioribus; prothorace quam longiori ut 9 ad  $5\frac{1}{2}$  latiori, antice sat fortiter angustato marginato, supra coriaceo et sparsius subgrosse punctulato, utrinque pone medium fovea magna et fere ad medium altera minore impresso (his oblique positis), lateribus leviter crenulatis mox pone medium minus fortiter dilatato-rotundatis antice quam postice multo magis alte reflexis, angulis anticis rotundato-obtusis posticis (superne visis) obtusis, basi marginata sat fortiter bisinuata; scutello fere ut pronotum punctulato; elytris fere ut pronotum sed multo magis leviter punctulatis, vix perspicue costulatis; pygidio minus fortiter sat crebre subrugulose punctulato; tibiis anticis extus tridentatis, dente summo subobsoleto; tibiaram posticarum (his ad apicem haud dilatatis) calcaribus nitidis sat gracilibus spiniformibus; segmento ventrali apicali sat anguste

minus perspicue emarginato; tarsis posticis quam tibiæ vix brevioribus. Long., 9-10 l.; lat.,  $4\frac{2}{3}$ - $4\frac{1}{2}$  l.

This species is probably near *L. crinita*, Brenske, but is clearly distinct from it by numerous differences—among others, the quite strongly bisinuate base of its pronotum, the absence of hairs and scales on its dorsal surface, and its elytra with scarcely any indication of longitudinal costæ, which are faintly traceable here and there only from certain points of view. The flabellum of the antennæ is about equal in length to the five preceding joints together. The conspicuous foveæ on the pronotum, being exactly similar in the two specimens before me, seem likely to be more than a merely accidental character. I do not think the specimens are abraded. It should be noted that the puncturation of the dorsal surface becomes distinctly finer near the lateral margins than in the middle parts.

Queensland (Townsville). From Mr. Perkins.

*L. gilesi*, sp. nov., Mas. Elongata, sat augusta, postice minus dilatata; rubro-ferruginea; minus nitida; supra pilis minutis albidis setiformibus in capite et elytris sparsim, in pronoto confertim, vestita; pygidio ventrequè pilis brevibus vestitis; metasterno coxis posticis et pedibus longe pallide fulvo-pilosis; femoribus posticis autem squamis albis sat crassis sparsim vestitis; capite crebre inæqualiter sat grosse ruguloso; clypeo modice reflexo, antice parum emarginato; palporum maxillarium articulo apicali sat dilatato, supra excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> haud (quam 4<sup>us</sup> vix) longiori, flabelli laminis quam antennarum articulus basalis fere triplo longioribus; prothorace quam longiori ut 8 ad  $5\frac{1}{2}$  latiori, antice sat fortiter angustato marginato, supra confertim subtilius ruguloso, areis nonnullis præsertim in media parte glabris nitidis instructo, lateribus nonnihil crenulatis mox pone medium rotundatis parum dilatatis antice quam postice multo magis alte reflexis, angulis anticis rotundato-obtusis posticis (superne visis) fere rotundatis, basi subtiliter marginata minus fortiter bisinuata; scutello fere ut elytra punctulato; his subfortiter sat crebre ruguloso-punctulatis, parum manifeste costulatis; pygidio crebre subtilius ruguloso; tibiis anticis extus fortiter tridentatis; tibiæ posticarum calcaribus modice angustis, nec a basi ad medium dilatatis; segmento ventrali apicali simplici; tarsis posticis quam tibiæ vix brevioribus. Long., 9 l.; lat., 4 l.

North-West Australia (Giles); sent by Mr. Carter (his No. 12).

*L. negatoria*, sp. nov., Mas. Elongata; sat parallela: ferruginea, nonnihil picescens, elytris antennis tarsisque dilutioribus; sat pruinosa: supra squamis minutis albidis sparsim vestita; subtus squamis minus minutis albidis vestita (in media parte, et in pedibus, sparsim, latera versis confertim); metasterno coxisque posticis pilis elongatis pallide fulvis dense vestitis; capite crebre fortiter punctulato; clypeo minus alte reflexo, antice sat fortiter emarginato; palporum maxillarium articulo apicali subcylindrico, quam latiori triplo longiori, supra haud excavato; antennarum articulo 3<sup>o</sup> quam 2<sup>us</sup> et quam 4<sup>us</sup> vix longiori, flabelli laminis quam antennarum articulis basalis manifeste longioribus; prothorace quam longiori ut 11 ad 6½ latiori, antice marginato fortiter angustato, supra sparsius subtilius nonnihil acervatim punctulato, lateribus leviter crenulatis mox pone medium fortiter dilatato-rotundatis antice quam postice multo magis alte reflexis, angulis anticis obtuse rectis posticis (superne visis) acutis retrorsum directis, basi modice bisinuata haud continuatim marginata; scutello et elytris fere ut pronotum punctulatis, his perspicue costulatis; pygidio sparsius subtiliter punctulato; tibiis anticis extus sat fortiter tridentatis; tibiaram posticarum calcaribus nitidis angustis spiniformibus; segmento ventrali apicali æquali; tarsis posticis quam tibiæ parum brevioribus. Long., 13 l.; lat., 5½ l.

This species is near *L. deceptrix*, Blackb., and *caudata*, Blackb., but differs from both by its pronotum not margined at the base. From *caudata* it differs also by, *inter alia*, the acute hind angles of its prothorax (which is much more strongly narrowed in front) and the very much finer and sparser puncturation of its pygidium. From *deceptrix* it differs by its prothorax very evidently more strongly narrowed in front and by the finer and much less close puncturation of its pronotum (about 20 instead of about 30 punctures in the length of the segment).

Queensland (Port Mackay).

A. Metasternum pilose.

B. A well-defined nitid beading all across front of pronotum, and front part of lateral margins of pronotum strongly reflexed and with strong reflexed margins continued round front of angles.

C. Base of pronotum with a continuous raised beading preceded by a distinct transverse stria.

D. Front angles of pronotum strongly and sharply defined.

E. Basal angles of pronotum sub-spiniform and divergent ... *deceptrix*, Blackb.

- EE. Basal angles of pronotum not as in E. . . . . *caudata*, *Blackbb.*
- DD. Front angles of pronotum obtusely rounded. . . . . *townsvillensis*, *Blackbb.*
- E. Pronotum sparsely punctured . . . . . *gilesi*, *Blackbb.*
- EE. Pronotum confluent punctured . . . . .
- CC. Base of pronotum not with a continuous distinct edging. . . . .
- D. Pronotum sparsely punctured (about 20 punctures in its length). Metasternum densely albido-pilose . . . . . *negatoria*, *Blackbb.*
- DD. Pronotum notably more closely punctured. Metasternum thinly pilose. . . . .
- E. Propygidium as two planes . . . . . *frenchi*, *Blackbb.*
- EE. Propygidium normal . . . . . *perkinsi*, *Blackbb.*
- BB. Front of pronotum not continuously margined, or not as B. . . . .
- (2) C. Middle tooth of front tibiae much nearer to apical than to basal one . . . . . *darwini*, *Blackbb.*
- D. Clypeus feebly emarginate. Scutellum feebly punctured . . . . . *squamulata*, *Waterh.*
- E. Hind angles of pronotum sharp . . . . . *leai*, *Blackbb.*
- EE. Hind angles of pronotum roundly obtuse . . . . . *suavior*, *Blackbb.*
- AA. Metasternum not pilose. . . . .
- B. Pronotum quite strongly narrowed in front. . . . .
- C. Clypeus strongly emarginate (a line across clypeus at back of emargination at least no further from clypeal suture than from furthest front of clypeus). . . . .
- D. Pygidium very finely and confluent punctured (elytral costae well defined) . . . . . *grata*, *Blackbb.*
- DD. Pygidium much less finely and closely punctured (elytral costae very feeble). . . . .
- E. Pronotum distinctly margined both at base and apex . . . . . *rubrior*, *Blackbb.*
- EE. Pronotum distinctly margined neither at base nor apex . . . . . *degener*, *Blackbb.*
- ra very feebly emarginate. . . . .
- ra very closely punctured . . . . . *rothei*, *Blackbb.*
- ra less closely punctured. . . . .
- E. Pronotum very coarsely rugulose . . . . . *rufa*, *Blackbb.*
- EE. Pronotum not as E. . . . . *koebelsi*, *Blackbb.*
- BB. Pronotum very wide in front . . . . . *bovilli*, *Blackbb.*

(2) The table as drawn up by Mr. Blackburn was evidently intended to be rewritten, as many of the words were abbreviated, some notes not intended for publication were on it, and there is no CC. to correspond with the present one, nor any DD. Still I think it will be found useful as now given.—A. M. LBA.

## MACROPHYLLIDES.

This aggregate stands in Lacordaire's classification as the 7th "subtribe" of the *Melolonthides*, the *Melolonthides* being treated by him as the first "Tribe" of the second "Legion" (*Lamellicornes Pleurostictiques*) of the "Family" *Lamellicornes*. As, however, a "subtribe" (*Systellopides*) has been added in the Tribe since the date of Lacordaire's work, and is (rightly, I think) placed as its first member, the *Macrophyllides* become the 8th subtribe. Of the eight subtribes three are not as yet known to occur in Australia, and therefore this subtribe is the 5th as far as Australian *Melolonthides* are concerned. I have already discussed this classification more fully in former papers (e.g., Trans. Roy. Soc., S.A., 1905, p. 276), and now merely summarize the outline for the sake of convenience. A tabular statement of the characters of the subtribes will be found in the memoir just referred to. It should be noted, however, that in the statement the *Macrophyllides* stand as the last of the subtribes known to be Australian, whereas in the following pages of this present memoir I am referring an Australian species to the 8th of Lacordaire's subtribes (the 9th including the *Systellopides*)—viz., the *Pachypodides*, and that that subtribe should therefore be added after the *Macrophyllides*. Lacordaire distinguishes the *Pachypodides* from the other subtribes by its "mouth organs partly atrophied." The *Systellopides* also have mouth organs partly atrophied, but differ from the *Pachypodides* by, *inter alia*, their labrum on the plane of the clypeus projecting forward from that organ.

Of known Australian *Melolonthid* species only one appertains to the *Macrophyllides*, viz., *Othonnius batesi*, Ölliff. There can, however, be little doubt that the Australian insect on which Erichson founded his genus *Holophylla* (without naming the species) is a *Macrophyllid*, and is distinct from *Othonnius batesi*. I have discussed that genus in a former paper (Trans. Roy. Soc., S.A., 1911, pp. 181, etc.), in removing it from the true *Melolonthides*, and have nothing fresh to be added now concerning it.

## PACHYPODIDES.

## ZIETZIA.

When I described this genus (Trans. Roy. Soc., S.A., 1894, p. 205) I attributed it to the *Macrophyllides*, but my subsequent study of the Australian *Melolonthides* has made me very doubtful for some time past whether I was right in placing it there, on account of its simple claws and its facies. The fact is that at the time I described it I had the



misfortune to break my dissections of the mouth parts and was not able to furnish details of them, beyond such as I could gather from inspection of the fragments. A small fragment of a maxilla had a small tooth, and so I merely stated of the maxilla that it was "toothed," and on that ground considered it excluded from the *Pachypodides* and excluded from that aggregate I could only regard it as a *Macrophyllid* aberrant in facies and in respect of its claws. I have now made a more successful dissection, with the result of considering it an aberrant *Pachypodid*. The outer lobe of its maxillæ is not altogether atrophied, as Lacordaire states those of the *Pachypodides* to be, but it is extremely feeble—a mere short, straight, ciliated projection, which, however, becomes corneous at the extreme apex, and is there bifid, so as to simulate two minute teeth, which in a fragmentary maxilla I took to be apices of a larger tooth. In all other respects the mouth parts agree well with those of the *Pachypodides*, the mentum being very small without a visible ligula and the labial palpi having their apical joint cylindric and about three times as long as the preceding joints (which are extremely minute) together. I feel no doubt that this very remarkable insect is a *Pachypodid*, aberrant to the extent of having the outer lobe of its maxillæ a little more developed than is usual in that aggregate.

This seems to be the first true *Pachypodid* recorded from Australia, for although Erichson referred to the aggregate a genus which he characterized under the name *Prochelyna*, Dr. Sharp has pointed out the probability that that genus (of which, however, he had not seen a representative) ought to be placed in his "*Systellopides*," and in this I have no doubt of his correctness, as I have before me an insect recently taken by my son, Mr. J. S. Blackburn (and also discussed in this paper), which is almost certainly *Prochelyna heterodoxa*, Burm. (Erichson did not describe a species of the genus), and it is certainly a *Systellopid*.

I have already referred to the characters and position of the *Pachypodides* in this present memoir under the heading "*Macrophyllides*." This is the last of the *subtribes* of *Melolonthides* known at present to inhabit Australia.

#### RUTELIDES (Second Tribe of *Melolonthides*).

The essential characters distinguishing this Tribe from the other Tribes of *Melolonthides* are shown in a tabular statement in a former paper of this series (Trans. Roy. Soc., S.A., 1905, p. 276). The *Rutelides* are fairly numerous in Australia, and include many of our largest and most beautifully coloured *Melolonthid* species. I do not, however, pro-

pose to deal with them in this Revision of the Australian *Melolonthides*, because an eminent European student (Dr. F. Ohaus, of Hamburg) has made them the special object of his investigation. He has published already (Stett. ent. Zeit., 1904, pp. 57, etc.) a most interesting "Revision der *Anoplognathiden*" (a subtribe of *Rutelides* to which nearly all the known Australian species of the Tribe appertain), and is at present—as he informs me—proceeding with his work on the remaining subtribes. I therefore gladly refer Australian students of this aggregate to his valuable treatises, and for the present, at any rate, abstain from dealing with the matter more particularly.

#### DYNASTIDES.

The classification of the Australian genera of this Tribe (which is the third of the Tribes into which Lacordaire divides his second "Legion" of *Lamellicornes*—*vide* Trans. Roy. Soc., S.A., 1905, pp. 275, etc.) cannot be satisfactorily ordered in accordance with that set forth by Lacordaire. That author reduces below the level of even generic rank a character which, as far as the Australian *Dynastides* are concerned, appears to me to be the primary one by which the Tribe should be divided into two main aggregates, *viz.*, the structure of the apex of the posterior tibiæ which is either (*a*) ciliate or (*b*) non-ciliate. In this Tribe it is particularly difficult to find available generic characters which are neither sexual nor such as involve the dissection of the mouth organs—both of them, no doubt, of great importance (especially the former), but both of them highly inconvenient for practical purposes: the structure of the posterior tibiæ, however, is easily observed, and divides the Australian genera into two aggregates, all in one of which resemble each other in facies much more than they resemble any genus in the other aggregate. M. Lacordaire's classification must be discussed here, in order to show the objection to its use for Australian genera. He separates from all the rest of the Tribe two small subtribes characterized one by the structure of the mandibles, the other by the position of the base of the labial palpi. The former of those is not known to be Australian, and therefore need not be discussed here. To the latter he attributes *Cryptodon* and (conjecturally) *Semanopterus* of Hope (which he calls, probably by a clerical error, *Semanotus*, making no remark on the change of name). I have dissected a number of species of *Semanopterus*, and find that the labial palpi are inserted as Lacordaire conjectures them to be, under the edge of the mentum, so that the basal joint is more or less concealed; but inasmuch as the subtribe

(*Phileurides*) to which this decidedly obscure character would refer *Semanopterus* is treated as containing genera both with ciliate and non-ciliate posterior tibiae, it does not appear to me a natural arrangement in respect of the Australian *Dynastides* to regard *Semanopterus* (including *Asemantus*) and *Cryptodus* as representing an aggregate of equal rank with one containing all the other genera, as would have to be done if Lacordaire's classification were strictly adhered to, especially since there is no other conspicuous character that I have been able to discover that would suggest *Semanopterus* being widely distinct from several other genera of those having the posterior tibiae ciliate. As regards *Cryptodus* there is so little resemblance between its mouth organs and those of *Semanopterus* (beyond the bare fact that the labial palpi are not entirely exposed in either), and the two are so ultra-dissimilar in facies and in almost all characters that I have no doubt they ought to be placed in distinct primary divisions of the Tribe. My want of knowledge of *Phileurides* occurring in other countries than Australia disqualifies me for the task of criticising the contents of that aggregate in general, but I find it hard to believe that genera with posterior tibiae truncate and ciliate ought to be associated with genera having those tibiae digitated and non-ciliate, and still harder to believe that species so differing from each other ought to be placed in the same genus, as Lacordaire places species which he attributes to the genus *Phileurus*.

After distinguishing the two subtribes referred to above from the rest of the *Dynastides*, Lacordaire divides the remainder into subtribes founded on the structure of the front tibiae of the male. It may well be, and probably is, the case that this is in reality of great importance in a natural classification, but (as Mr. Arrow has pointed out—Tr. Ent. Soc., Lond., 1908) characters appertaining to one sex only are objectionable—in the sense of "inconvenient," no doubt, he means. The reason of that, I take it, is simply that it prevents generic apportionment of species of which only one sex is known; but there seems to be no reason for saying that it does not, in the scheme of Nature, represent a divergence as fundamental as that connected (say) with the form of the mentum. My limited knowledge (and I admit it is limited) of *Dynastides* outside Australian forms seems to point to the probability that the presence of sexual characters in the front tibiae is much more than a trivial character; but I agree that, so long as there are numerous species of which one sex only is known, the character is unworkable, and therefore that M. Lacordaire's aggregates founded on it should be rejected for the present. In one of these aggregates M.

Lacordaire places three subtribes, only one of which (*Oryctides*) is known as Australian, and he distinguishes that subtribe from the other two by its presenting sexual characters in the head and prothorax. That particular character, so far as concerns Australian *Dynastides* known to me, need not be discussed here, inasmuch as the subtribes without sexual characters in either front tibiae or head or prothorax are not known to occur in Australia, but its classificatory value is certainly discounted by the extraordinary variability of development in the sexual structure of the head and prothorax within the limits of a genus or even of a species (some males of *Dasygnathus*, for example, having head and pronotum very little, and others enormously, different from those segments in the female).

M. Lacordaire divides the *Dynastides* having sexual characters in the front tibiae into two subtribes (distinguished from each other by non-sexual characters), but as only one of these (the "true *Dynastides*") is known, or likely to be Australian, their differences need not be discussed in this memoir. The following, then, is M. Lacordaire's arrangement of the *Dynastides* so far as concerns those of his subtribes known to be Australian:—

- A. Labial palpi inserted on the sides of the mentum.
- B. Front tibiae similar in the two sexes      *Oryctides*
- BB. Front tibiae sexually elongate in the males      ...      ...      true *Dynastides*
- AA. Labial palpi inserted in the internal face of the mentum      ...      ...      *Phileurides*

The first of the above subtribes (*Oryctides*) includes in Lacordaire's arrangement nearly all the *Dynastid* genera of Australia, and is subdivided into four "Groups" (all of them Australian). Here for the first time the structure of the posterior tibiae finds a place in the tabulations, three groups being distinguished from the other group (true *Oryctides*) by having those organs truncate and ciliate at their apex, though for some unaccountable reason he places in the true *Oryctides* *Dasygnathus*, which has posterior tibiae strongly ciliate. The three groups with ciliate posterior tibiae are distinguished by the presence of sexual characters in the antennae (*Oryctomorphides*) and the feebly (*Pentodontides*) or strong (*Pime-lopides*) triangular form of the basal joint of the hind tarsi. The antennal sexual character (though no doubt an extremely important one) is, like other sexual characters, unsatisfactory, at any rate for the present. As regards the distinction, *inter se*, of the two Groups not having sexual characters in the antennae by the more or less triangular form of the basal joint of the hind tarsi there are too great differences in that

respect within the limits of a genus to justify the importance that Lacordaire assigns to it. For example, *Cheiroplatys* is placed in the Group having that joint feebly triangular and *Horonotus* in the other Group, but there is really very little difference between the degree of triangularity in some species of *Cheiroplatys* and some of *Horonotus*. This same character moreover is variable with sex, the males (in at least some species) of *Pimelopus*, for instance, having the basal joint of the hind tarsi quite evidently less strongly dilated at the apex than their females. The result of all this is that a female *Dynastid* cannot be confidently referred to its Group by the use of Lacordaire's subtribal or group characters, and the same remark may be applied to Burmeister's classification, at any rate in respect of Australian species, that author also basing his main aggregates on sexual characters.

The classification of the *Dynastides*, excluding characters that either are sexual or cannot be ascertained without dissection, is no doubt extremely difficult, and some characters that one would naturally turn to as hopeful are found to fail when a long series of species are examined. The form of the mandibles is one of those, the presence of teeth or notches on the external outline being very conspicuous in some mandibles and entirely wanting in others; but it is certainly not strictly and invariably a generic character, the greatest possible diversity existing within the limits of *Isodon* (for example) in the form of the external outline of those organs; in the species which I take to be *I. pecuanus*, Reiche (for instance), the external edge of the mandibles is strongly dentate, while in the species that I have no doubt is *I. australasiae*, Hope, the external edge is not even distinctly sinuate, although there is an obtuse projection directed forward at the apex—not on the lateral margin—which is, no doubt, what Lacordaire refers to when he says "*mandibules terminées en dehors par une dent seule large et obtuse.*" So again with the greater or less projection of the mandibles; it varies either specifically or according to their attitude when the insect died. In *Novapus* a generic character is asserted "*mandibulae crassae porrectae*," which is the case with all my specimens of *N. crassus*, Shp. (the typical species), but in the closely allied *N. adelaedae*, Mihi, the appearance of the mandibles is scarcely different from that in *Isodon australasiae*, Hope.

The presence and form of organs of stridulation again is not always generic. In *Isodon puncticollis*, MacL., they are present as two short lines of a transverse rugæ, in *I. australasiae* they are wanting, in an undescribed species before me which I hesitate to separate from *Isodon* they are present

as two rugate carinæ running the whole length of the propygidium. If this and the last-mentioned character were insisted on as generic *Isodon*, as it now stands, would need to be broken up into four genera, and still further division would be necessary in it if the sexual characters of the tarsi were taken into account.

The number of transverse carinæ on the posterior tibæ would suggest itself as likely to be a character of generic rank; but, again, it falls short of more than specific value, for in some genera (notably *Pimelopus*) species with posterior tibæ transversely bicarinate are quite closely allied with others in which those tibæ are only unicarinate.

Even in the mouth organs there is similar uncertainty. M. Lacordaire records variation in the number of teeth in the external lobe of the maxillæ in genus after genus; in all the genera in which I have dissected the mouth organs of any considerable number of individuals I have found that the number of teeth in the outer lobe of the maxillæ varies with the species.

When all these difficulties in the way of classification have been considered there seem to be but few characters left from which a better result can be looked for, and I am obliged to acknowledge that the best scheme I can suggest for the arrangement of the Australian *Dynastides* is unsatisfactory to the extent of failing to associate together, in some cases, species that probably ought to stand near each other in a natural arrangement, which, I believe, would be one that should treat sexual characters as of at least secondary importance. In the scheme that I propose to follow I have excluded sexual characters as, for the present, unworkable; but in some instances have added, in the tabulation of characters,<sup>(3)</sup> some sexual peculiarities in brackets (especially where they distinguish the female) that seem sufficiently marked and constant to be useful.

As already indicated, I think the Australian *Dynastides* should be divided into two main aggregates, in the former of which the hind margin of the posterior tibæ is fringed with ciliæ or (rarely) short spines, and is more or less widely truncate on its lower face, while in the latter it is non-ciliate and non-truncate. The former of these includes nearly all the Australian genera.

The former of these aggregates I propose to divide into two secondary aggregates distinguished by the structure of the clypeus, which is best observed from a point obliquely in

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(3) This tabulation was not with the papers ready for publication.—A. M. LBA.

front of that organ. In the first of these secondary aggregates the free outline of the clypeus is seen to consist of three distinct lines (the sides and the front), of which the middle (front) line is usually shorter than the others and always notably uneven—either raised as a conspicuous lamina or notched in the middle or dentiform at its extremities. In the genera that I regard as forming the other secondary aggregate the free outline of the clypeus is usually a continuous curve, the appearance of sides and front as three distinct lines being exceptional (scarcely existent outside *Dasygnathus* and *Adoryphorus*), but in either case the free outline in its front is level (or all but level, at most slightly sinuous) in the sense of not being raised in any part as a lamina (as in some *Isodontes*) nor toothed (as in some *Isodontes*, etc.) nor arched upward (as in various *Semanopleri*, etc.) nor notched in the middle (as in *Horonoti*, etc.). In this secondary aggregate, moreover, the clypeus (when its outline is not a regular curve such that the front can hardly be considered distinct from the sides) is never conspicuously narrowed in front, its front in no case being much narrower than its base, while in the former secondary aggregate the width of the clypeus in front exceeds that of half its width at its base in no genus, I think, except *Horonotus*, which genus, however, the conspicuous notch in the middle of the front of the clypeus assigns without doubt to the former secondary aggregate.

Mr. Arrow (Ann. Nat. Hist., 1911, p. 156) proposes a new generic name—*Metanastes*—for two species, one of which is my *Pentodon australis*.

## BUPRESTIDÆ.

### NEOSPADES.

In his paper on the Classification of the *Buprestidæ*, M. Kerremans placed this genus beside *Cisseis*—which is certainly its right place—and distinguished it from the latter by its antennæ dentate only from the fifth joint, adding a note that he had not seen a member of the genus, and therefore had taken the distinctive character as stated by the author. That character is not, however, the essential one, although the diagnosis of *Neospades* perhaps justified M. Kerremans in his use of it. In the diagnosis it was stated as a second distinctive character that the 5th antennal joint is the first that is "distinctly" dentate. At the time I had seen only one species of the genus, which I believed with hesitation to be (*Oræbus chrysopygius*, Germ. I have since seen other species (two of which I have described) and have increased

my doubt of the identity of *chrysopygius*, Germ., with the type *Neospades*, as the acceptance of that identity would involve a greater instability of markings than I have found in other species of the genus. I feel, however, no doubt about *chrysopygius* being a *Neospades*. In the type of the genus—which I may call *chrysopygius*, Blackb. (? Germ.)—the 4th antennal joint is decidedly triangular, intermediate in form between the 3rd and 5th (which I intended to express by calling it “not distinctly” of the serrate series); but with very much more numerous species of *Cisseis* before me than I had in 1887, I am satisfied that a satisfactory generic distinction cannot be founded on that antennal character since the 4th antennal joint is certainly in some species of *Cisseis* not more serrate than in some of *Neospades*. Nevertheless the tendency in *Neospades* is distinctly to a less dilated 4th antennal joint [in one species *N. (Buprestis) cruciatus*, Fab., that joint is quite simple] than in *Cisseis*.

It is, however, in respect of the characters mentioned first in the diagnosis (those of the tarsi and especially the claws) as distinctive from *Cisseis* that the essential difference is to be found. Under *Cisseis* there now stand species differing from each other so much in their tarsal and claw characters that I have no doubt other genera still remain to be cut out of that aggregate; but at any rate there is a wide difference between *Neospades* and *Cisseis* in respect of tarsi and claws. Apparently *C. duodecimmaculata*, Fab., is the type of *Cisseis*. Compared with *Neospades* its tarsi are seen to be moderately elongate and but little compressed, with the basal two joints together much longer than the claw joint, and the claws are of the type which Lacordaire in dealing with the *Lamiides* calls “divaricate,” and are shortly bifid at the apex; while in *Neospades* the tarsi are very short and very strongly compressed, with the claw joint not much shorter than the basal two joints together and the claws very strongly of the type which Lacordaire calls “divergent” (the two almost parallel with each other) and so deeply bifid that from a certain point of view the joint appears somewhat as if there were four almost equal and almost parallel claws. In facies, too, *Neospades* differs notably from *Cisseis*, especially in respect of colouring, all the species with tarsi as described above having elytra with at least two bright and well limited metallic colours, which is at most very feebly approximated in any *Cisseis* known to me.

*Neospades*, then, is thus differentiated from *Cisseis*:—  
“Tarsi very short and very strongly compressed; claws of the divergent type, almost parallel with each other and very deeply bifid.”



As far as I know the following names are all that have been given to species of *Neospades*, viz.:—(*Buprestis*) *cruciatus*, Fab.; (*Coræbus*) *chrysopygius*, Germ.; (*Cisseis*) *apicalis*, Macl.; (*Cisseis*) *dimidiata*, Macl.; (*Cisseis*) *cuprifer*, Gestro; *N. lateralis*, Blackb., and *simplex*, Blackb.; (*Cisseis*) *splendida*, Kerr.

It may be mentioned here that the claws of *Ethon* are like those of *Neospades*, but the tarsi of the former are longer and not, or but little, compressed, resembling those of

#### GERMARICA.

Mr. Carter has stated (Proc. Linn. Soc., N.S.W., 1909, p. 122) of my *G. casuarinæ*:—"I have little doubt but that this is the insect described as *Aphanisticus liliputanus*, Thoms., but the entirely misleading and inadequate description is a strong justification for Mr. Blackburn's re-description." If Mr. Carter has compared an authentic specimen of *G. casuarinæ* with Thomson's type, I suppose there is nothing more to be said in the matter; but if not it may be noted that Thomson's description is misleading indeed if it was founded on a specimen of the insect I described. Thomson's type was from New South Wales (mine from South Australia), has elytra at apex "*subtruncata et biacuta*" (the elytra of my species are rounded at the apex), and is scarcely more than half the size of *G. casuarinæ*; Thomson calls it "the smallest *Buprestid* known to us." I may add that I have numerous specimens of a *Germanica* from New South Wales of the size that Thomson attributes to *liliputanus* (with elytra, however, not at the apex agreeing with Thomson's description), and differing from *casuarinæ* by, *inter alia*, its notably narrower and more elongate form.

#### ELATERIDÆ.

##### PARACREPIDOMENUS.

In characterizing this genus Dr. Schwartz does not refer to the sexual characters of its species, nor does he mention the sex of the two species he describes, which are both known to me as occurring on the Dividing Range of Victoria. The sexes do not present any very noticeable external distinctions except in the antennæ, which are shorter in the female (equalling in length about the first nine joints of those of the male in *P. fasciculatus* and in *P. linearis* about the first ten joints), and in the prothorax, which is (conspicuously in *fasciculatus*, less so in *linearis*) less sinuate on the sides, and carrying its width further forwards towards the apex. The tumidity and coarse sculpture of the apical ventral seg-

ment of *fasciculatus* is evidently a specific, not a sexual, character. The specimens described by Dr. Schwartz appear to be males.

Dr. Schwartz states that *Crepidomenus filiformis*, Cand., must be referred to this genus, but in describing his two new species mentioned above he does not differentiate them from *filiformis*. However, it may be inferred that they differ from that species by the third joint of their antennæ longer than the fourth, for he attributes that character to them both in describing them, and in the diagnosis of the genus he states that the third antennal joint is either exactly equal to, or longer than, the fourth; and as he recognizes only the three species the third antennal joint must be exactly equal to the fourth in the species that he regards as *filiformis*. That is the case in respect of the insect that I have myself believed to be *filiformis*.

Nevertheless, it now appears that my identification of Candèze's species was, according to its author, not correct. Many years ago I sent to Dr. Candèze specimens of what I regarded as his *C. filiformis*, on which he did not write me any remarks, confirmatory or otherwise. Lately, however, I have acquired the 6th part (1896) of Candèze's "Elaterides nouveaux" which I had not previously seen, and I find it stated there that the species I sent to the author is a new one closely allied to *filiformis*, and which he describes under the name *sulcicollis*. He erroneously attributes it to Adelaide, doubtless through that being my place of residence. Its *habitat*, however, is Victoria—the *habitat* of *filiformis* also. As I have a fairly extensive collection of Victorian *Elateridæ*, including numerous *Paracrepidomeni*, from various localities in that State, and Candèze refers to his having seen *filiformis* from Victoria in four different collections, it is improbable that that species is not before me. Candèze differentiates *sulcicollis* from *filiformis* as being less pubescent, with the prothorax of the male more elongate and parallel, and with the median sulcus of the pronotum not abbreviated. As I find in the series of specimens which I have attributed to *filiformis* varying differences (in respect, sometimes of one, sometimes of another, sometimes of all, of those characters) among individuals taken in a single locality, I cannot accept *sulcicollis* as even a well-marked variety of the older species. Dr. Schwartz, when he formed the genus *Paracrepidomenus*, seems to have overlooked *sulcicollis*—at any rate, he made no mention of it.

DESCRIPTIONS OF AUSTRALIAN CURCULIONIDÆ, WITH  
NOTES ON PREVIOUSLY DESCRIBED SPECIES.

PART X.

By ARTHUR M. LEA.

[Read September 12, 1912.]

Subfamily OTIORHYNCHIDES.

HACKERIA VIRIDIVARIA, Lea.

Mr. H. Elgner has recently taken this beautiful weevil on Darnley Island, in Torres Straits.

Subfamily LEPTOPSIDES.

MANDALOTUS FOVEATUS, n. sp.

♂. Black; antennæ, tarsi, and trochanters more or less red. Densely clothed in parts with muddy-grey scales, with fairly numerous and evenly distributed suberect setæ.

*Head* with dense, concealed punctures. Rostrum acutely carinate throughout. Antennæ moderately long, first joint of funicle distinctly longer than second. *Prothorax* about as long as wide, sides almost evenly rounded, but base slightly wider than apex; with fairly large and round, somewhat flattened granules, each with a setiferous puncture. *Elytra* with moderately-rounded shoulders, sides parallel to beyond the middle; with regular rows of large, more or less concealed punctures; alternate interstices feebly raised. *Metasternum* and basal segment of abdomen with a large deep fovea, common to both; abdomen with granules at sides. *Legs* rather long; front coxæ moderately separated; femora stout; tibiæ with more or less distinct granules, the first pair denticulate on their lower edge. Length (excluding rostrum), 4.6 mm.

♀. Differs in having the antennæ shorter, prothorax not quite as long as wide, elytra slightly wider than prothorax instead of the exact width of same, metasternum and abdomen not foveate, the latter with more distinct and evenly-distributed granules, legs shorter and femora thinner.

*Hab.*—New South Wales: Guyra (H. J. Carter).

All the (seven) specimens before me appear to be abraded, so that the prothoracic granules are conspicuous. Should this character, however, be natural the species in my table would be associated with *seticollis* and *reticulatus*;

from the latter it is distinguished by its much larger size, different shape and colour, etc.; from the former by the much less distances between the coxæ. But, regarding the granules as normally more or less obscured, then, as the front coxæ are not widely although very distinctly separated, it would be associated with *subglaber*, *cellaris*, and *spurcus*, from all of which it is readily distinguished by the abdomen. In size and outlines it approaches *piliventris*, but that species has the coxæ more distant from each other, abdomen of male less excavated and prothoracic granules smaller.

At the base of the elytra on one specimen there are two obscurely whitish spots of scales, so it is probable that on well-preserved specimens the clothing would be variegated.

MANDALOTUS BICARINATUS, n. sp.

♂. Black; antennæ and tarsi more or less red, femora and tibiæ in parts obscurely diluted with red. Densely clothed with muddy-grey scales, feebly variegated in places with dingy-white. With rather short, semi-decumbent setæ.

*Head* wide, punctures normally concealed. Rostrum short and stout: scrobes extending backwards almost to eyes, carina vaguely traceable through clothing. Antennæ moderately long; first joint of funicle stouter and slightly longer than second. *Prothorax* moderately transverse, sides strongly and evenly rounded; with dense, round, flattened, and normally partially-concealed granules. *Elytra* rather short, at base as wide as widest part of prothorax, sides feebly dilated to beyond the middle, and then coarctate to apex; with regular rows of rather large, but more or less concealed punctures; alternate interstices very feebly raised. *Meta-sternum* flat across middle. Abdomen with basal segment very feebly depressed in middle, a feebly-curved and shining carina occupying one-third of its apex, a second but smaller carina at apex of second segment. *Legs* rather short; front coxæ moderately separated. Length, 3-3½ mm.

♀. Differs in being wider, elytra subcordate, abdomen without carinæ, the basal segment gently convex, and the legs and antennæ somewhat shorter.

*Hab.*—Tasmania: Hobart, under logs (A. M. Lea).

In general appearance like very small specimens of *blackburni*, but abdomen with two carinæ; the second one is certainly less distinct than the first, but, as it is traceable on the three males before me, I presume it is constant. In size, and to a certain extent in appearance, it is fairly close to *bryophagus*, but, apart from the carinæ, it differs in having the apex of the first abdominal segment incurved to the middle, and the front coxæ not touching.

On each of three specimens before me there is a moderately distinct longitudinal patch of obscurely-whitish scales on each side of the prothorax, on two other specimens these patches are ochreous. The sides of the sterna and abdomen are sometimes supplied with rather distinct whitish patches.

MANDALOTUS TENUICORNIS, n. sp.

♂. Blackish-brown; appendages more or less reddish. Densely clothed with pale dingy-greyish or subochreous scales, feebly mottled with whitish scales in places; with rather short, semi-decumbent setæ.

*Head* wide; sculpture normally entirely concealed. Rostrum short, carina scarcely traceable through clothing. Antennæ decidedly longer and thinner than usual, passing middle of elytra; scape distinctly curved; funicle with two basal joints as long as the rest combined, first thicker, but not longer than second; club briefly ovate. *Prothorax* decidedly transverse, sides rather strongly dilated to near base; with large, round, flat, feebly-elevated granules, normally almost entirely concealed. Elytra oblong-cordate, widest at about middle; with regular rows of large, almost-concealed punctures; interstices just perceptibly alternately elevated, and of even width except towards sides. *Metasternum* shorter than usual. Abdomen long, basal segment gently concave, its apex straight, fifth slightly longer than third and fourth combined, somewhat elevated but slightly impressed in middle. *Legs* rather long; front coxæ touching; femora stout; tibiæ almost straight. Length,  $2\frac{1}{2}$ -3 mm.

♀. Differs in being larger and wider, elytra widest beyond the middle, abdomen nowhere concave, the apical segment not elevated, and the legs shorter.

*Hab.*—Victoria: Warrnambool (H. W. Davey); Tasmania: Ulverstone (A. M. Lea).

Readily distinguished, from others of the genus, by the long thin antennæ, with the combined lengths of the first and second joints fully half the total length of the funicle.

MANDALOTUS RUFIPES, n. sp.

Of a rather dingy reddish-brown, appendages paler. Rather lightly clothed with fine scales (almost setæ) closely applied to derm, interspersed with some suberect and rather fine setæ.

*Head* with dense partially-concealed punctures. Rostrum moderately long; carina indistinct. Antennæ moderately long; scape lightly curved; first joint of funicle stouter but scarcely longer than second. *Prothorax* almost as wide as

long, base wider than apex, but widest at about one-third from apex, where the sides are subangularly dilated: surface very uneven. *Elytra* at base as wide as widest part of prothorax, slightly and somewhat irregularly dilated to beyond the middle: with rows of large, but in places interrupted, punctures; suture thickened posteriorly; third interstice thickened about base, with a distinct tubercle about middle and another beyond same, and again thickened near apex; fifth interstice with two small tubercles posteriorly; some of the others somewhat thickened or subtuberculated in places. *Metasternum* gently concave. Abdomen moderately large, basal segment somewhat convex, its apex strongly incurved to middle. *Legs* moderately long; front coxæ moderately separated: femora stout; tibiæ rather short, near apex widely and gently emarginate. Length,  $2\frac{3}{4}$  mm.

*Hab.*—Tasmania: Waratah, in moss (A. M. Lea).

I am unaware as to the sex of the type, but its comparatively narrow form, with emarginated tibiæ, would appear to be masculine features; although these seem negatived by the convexity of the abdomen. But, in any case, the species should be readily distinguished by its upper-surface. In my table it would be associated with *coatesi*, which is a larger species with elytral tubercles smaller and differently disposed, and front coxæ more widely separated, etc. In general appearance it is not close to any previously described species.

The surface of the pronotum appears to be covered with small tubercles and irregular granules, but I have not abraded the type to examine it more in detail.

#### MANDALOTUS LATUS, n. sp.

Blackish-brown, antennæ and tarsi more or less reddish. Very densely clothed with pale-greyish scales, variegated with ochreous; with rather numerous suberect setæ.

*Head* wide; derm entirely concealed. Eyes smaller and more prominent than usual. Rostrum moderately long; median carina scarcely traceable through clothing. Antennæ moderately long; scape rather suddenly thickened at apex; first joint of funicle slightly longer and stouter than second. *Prothorax* almost twice as wide as long; sides strongly rounded, base not much wider than apex; surface uneven, and with dense, but normally-concealed punctures. *Elytra* short and wide; base strongly and evenly arcuate; shoulders thickened, sides feebly dilated to about apical third, thence strongly narrowed to apex; with rows of large, but almost-concealed punctures; alternate

interstices irregular, the third with a rather large tubercle just before summit of posterior declivity, and another between it and apex, fifth with a rather large tubercle, so placed that with the two on the third they form an equilateral triangle; elsewhere with feeble tubercular swellings. *Abdomen* with basal segment feebly convex. *Legs* comparatively short and stout; front coxæ touching. Length, 5 mm.

*Hab.*—Tasmania: Mount Wellington, in moss (A. M. Lea).

The type is probably a female. I have described it, however, as its unusually dense clothing, and conspicuous post-median tubercles, render it very distinct.

The femora are distinctly ringed with whitish scales, and the tubercles about the summit of the posterior declivity are supplied with dark scales; but otherwise there are no distinct markings, the ochreous and grey obscurely running into each other.

#### MANDALOTUS INCISUS, Lea.

Dr. Ferguson has taken at Blackheath (New South Wales) some specimens that are in better condition and larger (up to  $6\frac{1}{2}$  mm.) than the types. They all have whitish rings on the legs, dull-white spots at the sides of the abdomen, and an ochreous spot at the middle of the base of the prothorax.

#### MANDALOTUS SEVERINI, Lea.

A well-marked specimen of this species was recently taken from under a chip near the springs on Mount Wellington. Its prothorax has several sooty spots on each side, so disposed as to cause an appearance as of longitudinal stripes, outside of which the clothing is more or less ochreous; there is also a small round dark spot on each side of the middle. On the elytra many of the punctures are ringed with white. The head and rostrum are feebly striped. The apical half of the front tibiæ (as also those of the type) are armed with some small teeth on their lower surface.

#### MANDALOTUS SABULOSUS, Lea.

Recently taken by Mr. Carter at Eden (New South Wales).

#### MANDALOTUS NIGER, Lea.

The male of this species has the inner edge of the hind tibiæ traversed by from 15 to 20 carinæ; rather feeble towards the apex, but very pronounced towards the base. From certain directions they are remarkably distinct; but from most directions they are quite invisible.

## Subfamily CRYPTORHYNCHIDES.

The new genera proposed here are all more or less closely allied to *Poropterus*.

## NEODECILAUS, n. g.

*Head* large, convex, not at all concealed. Eyes depressed, almost circular, finely faceted. Rostrum moderately long and wide, curved; with a shallow groove on each side above scrobe. Antennæ rather stout: scape inserted nearer base than apex of rostrum and shorter than funicle: basal joint of the latter elongate; club ovate, subcontinuous with funicle. *Prothorax* transverse, sides moderately rounded, base very feebly bisinuate, constriction absent, ocular lobes obtuse. *Scutellum* absent. *Elytra* subovate, outline almost continuous with that of prothorax. *Pectoral canal* moderately deep and wide, terminated between intermediate coxæ. *Mesosternal receptacle* feebly raised, walls equal throughout, emargination semicircular; slightly cavernous. *Metasternum* less than half the length of the following segment: episterna narrow. *Abdomen* large, sutures distinct: two basal segments large, first not much longer than second, its apex incurved, intercoxal process moderately wide; third and fourth combined the length of fifth and slightly shorter than second. *Legs* rather short; posterior coxæ not touching elytra; femora sublinear, edentate, not grooved; posterior terminated before apex of abdomen; tibiæ rather short, third joint wide and deeply bilobed. Ovate, convex, squamose, non-tuberculate, apterous.

The mesosternal receptacle appears to be truly open, but on probing it is felt to be slightly cavernous. The genus is allied to *Deciluus*, from which it may be readily distinguished by the finely-faceted eyes. It appears also to be allied to *Optomerus*, but in that genus the posterior femora are said to be dentate. In general appearance both the species described below resemble the members of *Aonychus*, but the tarsi, metasternum, rostrum, etc., are utterly different. The sexes are easily distinguished; the ♂ has the rostrum clothed almost to apex, whilst in the ♀ it is shining and clothed only on each side at base; the eyes also are rather larger in the ♂ than in the ♀.

Clothing black and white ... .. picus, n. sp.

Clothing of various shades of grey ... .. gratus, n. sp.

## NEODECILAUS PICUS, n. sp.

Blackish-brown, antennæ and tarsi somewhat paler. Closely covered with black scales, a stouter one in each elytral puncture; almost snowy-white scales condensed into small



patches on each side at base of rostrum, each side of apex of prothorax and at base and apex along middle, four spots at base of elytra (on third and seventh interstices) and rather numerous small ones (often composed of but two or three scales) elsewhere, and especially beyond the middle; on the legs rather large patches at base and apex of femora, and at apex of tibiæ; under-surface with white scales

*Head* regularly convex, with dense but rather small and concealed punctures. Rostrum the length of prothorax, sides rather strongly incurved to middle, base once and one-half the width of apex; with rather strong but concealed punctures to apex in ♂; basal third only in ♀ strongly punctate, elsewhere finely punctate and shining. Funicle with first joint as long as second and third combined, third to seventh transverse. *Prothorax* moderately transverse; with dense, rather small, round, clearly-cut but partially-concealed punctures. *Elytra* scarcely twice the length of prothorax and at base scarcely wider, widest at about the middle, gently rounded and nowhere parallel-sided; with series of moderately large, distant punctures, each of which is almost filled by a scale; interstices not separately convex and considerably wider than punctures. *Under-surface* with rather small, concealed, and not very dense punctures. Length,  $4\frac{2}{5}$  mm.; rostrum,  $1\frac{1}{5}$  mm.; width,  $2\frac{1}{4}$  mm.

*Hab.*—Queensland (J. Faust): Endeavour River (Macleay Museum).

The scales are soft and round, and, with a little trouble, each is individually traceable. Several specimens under examination are entirely without white scales except at base of rostrum; in others (males) almost the entire rostrum is clothed with white scales, and there is almost a continuous median line of white scales on the prothorax. The small postmedian spots on the elytra are very variable in number and disposition.

#### NEODECILAUS GRATUS, n. sp.

Blackish-brown, antennæ and tarsi somewhat paler. Densely clothed with soft scales, varying from a dull-white to a dark smoky-grey; prothoracic scales larger (except than those in punctures) and looser than on elytra. Length, 4 mm.; rostrum, 1 mm.; width, 2 mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

I can find no structural differences whatever between this and the preceding species, except that the body of the present species is a trifle wider and that the eyes are slightly larger in both sexes. The clothing, however, is very different, both as regards colour and density. In *gratus* the paler scales

clothe the under-surface and legs (except at apex of femora and base of tibiæ), form three lines on prothorax (the lateral ones sometimes indistinct), and cause the elytra to appear speckled. In *picus* the prothoracic punctures, although covered by the scales, are very decidedly traceable; in *gratus*, on the contrary, they are entirely concealed by the scales, which there are larger and looser. The clothing of *gratus* is peculiarly soft and pretty, whilst that of *picus* is strongly contrasted black and white.

#### CEDILAUS, n. g.

*Head* large, partially concealed. *Eyes* small, convex, ovate, widely separated, coarsely faceted. *Rostrum* rather short, wide, sides incurved to middle, very feebly curved. *Scape* inserted nearer apex than base of rostrum, the length of funicle; two basal joints of funicle elongate; club ovate, subcontinuous with funicle. *Prothorax* convex, transverse, base truncate, sides rounded, apex feebly produced, constriction feeble; ocular lobes obtuse. *Scutellum* not traceable. *Elytra* briefly ovate, sides and apex rounded. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesosternal receptacle* strongly and suddenly raised in front, emargination strongly transverse, cavernous. *Metasternum* much shorter than the following segment; episterna not traceable posteriorly, but the triangular inner projection very largely developed. *Abdomen* large, sutures straight and distinct; first segment as long as the three following combined, intercoxal process very wide and truncate, third and fourth combined slightly longer than second or fifth. *Legs* moderately long; posterior coxæ touching elytra; femora deeply grooved, edentate, almost equal in width throughout, posterior not extending to apex of abdomen; tibiæ compressed, straight beneath, each with a large triangular projection near the base; tarsi short, third joint wide and deeply bilobed, fourth long and thin. *Ovate*, convex, squamose, nontuberculate.

The tibiæ are very remarkable, and would appear to denote an approach to *Psepholar*, whilst the polished sides and strongly-elevated mesosternal receptacle would seem to lead more towards *Idotasia*. I may, therefore, very likely be wrong in associating the genus with *Poropterus*, but, at any rate, most of the characters denote affinity with *Decilaus*. The metasternal episterna are also very remarkable, each posteriorly is not traceable, but its anterior inner projection becomes so largely developed that it is almost as long as the basal segment of the abdomen; it is besides plated with shining yellowish scales, so that its extent is easily seen.

Having only one specimen under examination I have not been able to see whether the wings are present or not, but the species appears to be apterous.

CEDILAUS AMBIGUUS, n. sp

Piceous-brown and shining through clothing, legs and antennæ red. Moderately-densely clothed with loose scales, varying from dingy-yellow to sooty-brown, and interspersed with longer suberect scales; flanks of elytra glabrous; under-surface, legs, head, and rostrum rather sparsely clothed; metasternal episterna densely clothed with shining yellowish scales.

*Head* convex; coarsely punctate; eyes prominent. Rostrum as wide at apex as at base, sides incurved to middle; coarsely but subseriatly punctate. First joint of funicle noticeably longer and stouter than second, the rest transverse. *Prothorax* rather widely transverse, apex more than half the width of base; with rather large, round, deep punctures; with a depressed and highly-polished median line, which disappears before apex. *Elytra* wider than prothorax and about twice as long, widest before middle, not much longer than wide; punctate-striate, punctures oblong and not very distinct; striæ moderately deep; interstices scarcely convex, the first narrower, the eighth wider than the others, all wider than striæ. *Under-surface* with moderately dense and large punctures. *Femora* densely punctate; each of the tibiæ with a large outer triangular extension, that of the anterior basal, of the intermediate at basal third, and of the posterior just before middle. Length,  $2\frac{3}{4}$  mm.; rostrum,  $\frac{3}{4}$  mm.; width,  $1\frac{1}{2}$  mm.

*Hab.*—New South Wales (Macleay Museum).

Only one specimen of this remarkable weevil has been under observation. The club is slightly paler than the preceding joints of the funicle, not darker, as is usually the case

HOPLODECILAUS, n. g.

*Head* rather large, convex, partially concealed. Eyes small, briefly ovate, widely separated, coarsely faceted. Rostrum rather short and stout, feebly curved. Scape inserted nearer apex than base of rostrum, shorter than funicle; basal joint of the latter elongate; club large, its outline continuous with that of funicle. *Prothorax* convex, transverse, sides rounded, base truncate, apex produced, constriction feeble, lobes obtuse. *Scutellum* absent. *Elytra* truncate at base, ovate, convex, shoulders, sides, and apex rounded. *Pectoral canal* deep and wide, terminated between intermediate coxæ. *Mesosternal receptacle* feebly raised, walls narrow and semicircular; slightly cavernous. *Meta-*

*sternum* considerably shorter than the following segment; episterna narrow but distinct and almost parallel-sided throughout, the anterior inner projection absent. *Abdomen* moderately large, sutures distinct, that between first and second curved; first as long as the two following combined, intercoxal process wide; third and fourth combined about equal in length to second or fifth. *Legs* rather short: posterior coxæ touching elytra; femora distinctly grooved, dentate, posterior terminated before apex of abdomen; tibiæ compressed, straight or feebly bisinuate beneath; tarsi rather short, third joint wide and deeply bilobed, fourth elongate. Ovale, convex, nontuberculate, apterous.

In this genus, which is undoubtedly very close to *Decilaus*, the shape of the metasternal episterna is very remarkable, each being almost parallel-sided throughout and with the anterior inner projection entirely absent. From *Decilaus* it is distinguished by the shape of the metasternal episterna and by the dentate femora; from the preceding genus, to which it also appears to be close, it is distinguished by the mesosternal receptacle, metasternal episterna, and femora.

#### HOPLODECILAUS MARMORATUS, n. sp.

Black, shining, more or less mottled with red or testaceous; antennæ pale-red. Sparsely clothed with whitish scales, longer and denser on under-surface and legs than elsewhere.

*Head* convex: densely and coarsely but equally punctate; ocular fovea not traceable. Rostrum shorter than prothorax, increasing in width from base to apex: rather coarsely punctate, but along middle with an interrupted shining impunctate space. Basal joint of funicle as long as second and third combined, third to seventh transverse and closely united. *Prothorax* moderately transverse, with dense, moderately large, round punctures; with a feebly-impressed median line. *Elytra* not twice the length of prothorax, widest at about middle, the outline subcontinuous with that of prothorax; with series of large, suboblong, deep, subapproximate punctures, of almost equal size throughout; interstices the width of or slightly wider than punctures, themselves finely punctate. *Under-surface* moderately densely punctate. *Femora* stout, densely punctate, feebly but rather acutely dentate. Length, 3 mm. (vix.); rostrum,  $\frac{2}{3}$  mm.: width,  $1\frac{1}{2}$  mm.

*Hab.*—Western Australia: Albany (R. Helms).

The head is dark-brown and darker than the rostrum; the prothorax is black, except at apex and along middle: the base, sides, and beyond middle of the elytra are more or

less mottled; the abdomen and legs are stained in places with piceous. The clothing of the upper-surface is very sparse and indistinct.

*IMALIODES SCITULUS*, n. sp.

♂. Black, antennæ almost black. Head and rostrum (almost to apex), prothorax and legs with dense whitish-grey scales, a few tufts of similar scales on elytra; elytra at base and a distinct subtriangular patch on each side of apex, and the greater part of the under-surface, with white scales.

*Head* with rather small concealed punctures; eyes finely faceted. Rostrum moderately curved; apical fourth densely punctate, behind antennæ coarsely punctate and with four grooves and three ridges, which, however, are more or less concealed. Antennæ inserted nearer apex than base of rostrum; second joint of funicle distinctly longer than first. *Prothorax* as long as wide, basal two-thirds subparallel, apex rounded, base feebly bisinuate; feebly impressed along middle; with small punctures which are concealed by clothing. *Elytra* wider than prothorax at base, which is almost truncate, with the shoulders not produced, widest before middle; with series of large, subquadrate punctures, wider than the interstices; these (especially the second) are in places subtuberculate; each separately rounded and produced at apex. *Metasternum* depressed along middle, the depression continued on to abdomen. *Femora* stout (but thinner than in *subfasciatus* or *terreus*), feebly dentate. Length,  $6\frac{1}{2}$  mm.; rostrum, 2 mm.; width,  $3\frac{1}{4}$  mm.

♀. Differs in having the rostrum smoother and shining, the punctures smaller, and the scales not continued beyond the middle, and the antennæ inserted at a greater distance from the apex.

*Hab.*—New South Wales: Illawarra, Kurrajong (Macleay Museum).

The prothorax as long as wide, with the sides subparallel for part of their length, and each elytron separately rounded at apex, render this a very distinct species. It appears to be close to *nodulosus*, which, however, is said to have a scutellum and the elytra sulcate-punctate. I have described the best-preserved specimen; two others have the scales of a uniform pale dingy-brown and almost without a trace of the very distinct basal and apical patches of white scales on the elytra of the type.

*IMALIODES OVIPENNIS*, n. sp.

Black, scapes and claws dingy-red. Densely clothed with suberect scales, confused amongst small mud-like ones, all of a uniform shade of dingy-brown.

*Head* with coarse concealed punctures: eyes finely faceted. Rostrum the length of prothorax, feebly curved, sides incurved to middle, coarsely and irregularly punctate, a feeble shining impunctate line along middle. Scape inserted almost in exact middle of rostrum, the length of three basal joints of funicle; of the latter the first joint is distinctly longer than the second, the others are transverse. *Prothorax* slightly transverse, base almost truncate; with moderately large but almost entirely-concealed punctures. *Elytra* ovate, as deep as wide, rather suddenly elevated above prothorax, shoulders not projecting and no wider than prothorax, widest at about middle; seriate punctate or foveate, punctures subquadrate, close together, partially obscured by clothing. Punctures of *under-surface* concealed. *Legs* long; femora with dense partially-concealed punctures, finely but acutely dentate, posterior just passing apex of elytra. Length,  $4\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{3}{4}$  mm.

*Hab.*—Queensland: Barron Falls (A. Koebele), Cairns (Macleay Museum).

In outline much like *nigricornis*, but the legs longer and thinner and the clothing very different.

#### IMALIODES FRATER, n. sp.

Dark blackish-brown, antennæ and tarsi dull-red. Densely clothed with suberect stout ochreous-brown scales; a feeble but distinct median fascia of paler scales on the elytra, the convex side of which is directed towards the base; each elytral puncture containing a scale, and outlined by scales, except beneath the fascia and towards base.

Funicle with the second joint longer but not much thinner than first. Length,  $5\frac{3}{4}$  mm.; rostrum,  $1\frac{3}{4}$  mm.; width,  $2\frac{3}{4}$  mm.

*Hab.*—Queensland: Mount Dryander (type in Mr. A. Simson's collection).

Remarkably close in appearance to *edentatus*, but larger, the clothing paler and with a feeble elytral fascia. The principal difference, however, lies in the funicle. In this species the second joint is distinctly longer than the first and not much thinner, the two combined being as long as the rest combined; in *edentatus* the second joint is shorter and much thinner than the first, and the two combined are shorter than the rest combined. I can find no other structural differences, but the punctures of the elytra are more clearly defined than in *edentatus*.

## ANCHITHYRUS CALIGINOSUS, n. sp.

Piceous-brown, antennæ dull-red. Not very densely (denser on legs than elsewhere) clothed with fawn-coloured scales.

*Head* densely but indistinctly punctate. Rostrum the length of prothorax, sides distinctly incurved to middle; with large, dense punctures, larger towards base and leaving an impunctate line along middle. Scape the length of three basal joints of funicle; of these the first is slightly longer than second, whilst none of the others are distinctly transverse. *Prothorax* with dense and rather strong punctures, except at apex, the interspaces feebly granulate. *Elytra* ovate, fully twice the length of and at base no wider than base of prothorax, widest at about middle: with series of large subquadrate punctures, each separated by a rounded ridge: interstices narrower than punctures and with small clusters of small granules. *Abdomen* rather coarsely but indistinctly punctate; intercoxal process rather narrow, third and fourth segments combined about equal to second or fifth; sutures of all deep. *Legs* densely punctate: posterior femora slightly passing elytra. Length, 6 mm.: rostrum, 2 mm.: width,  $3\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

In certain lights the elytra, when seen from behind, appear to be supplied with numerous transverse ridges; the interstices are much narrower than the punctures, and not continuously convex, but each is raised at the corner of and depressed in the middle of each puncture, the raised spaces being crowned with a few small granules (becoming very feeble towards the sides), so that each puncture is bounded on its four corners by clusters of feeble granules.

## ANCHITHYRUS RETICULATUS, n. sp.

Almost black, antennæ dull-red. Rather densely (except on rostrum) clothed with stout, subspathulate, reddish fawn-coloured scales, becoming subsetose on legs; a few darker scales at apex of prothorax.

*Head* with dense indistinct punctures. Rostrum almost the length of prothorax, sides distinctly incurved to middle; basal third coarsely punctate, elsewhere shining and with scattered and comparatively small punctures. Scape the length of four basal joints of funicle: of these the first is considerably stouter but not much longer than second, the others are transverse. *Prothorax* with dense and large but almost-concealed punctures. *Elytra* ovate, about twice the length of prothorax, but at base no wider; sides strongly

rounded: with series of large subquadrate deep punctures, each of which is separated by a rounded ridge: interstices much narrower than punctures. *Abdomen* indistinctly but rather coarsely punctate; third and fourth segments combined slightly longer than second or fifth; intercoxal process rather narrower: sutures of all the segments deep. *Legs* long; posterior femora passing elytra for about one-fourth their length. Length,  $3\frac{2}{3}$  mm.: rostrum, 1 mm.: width, 2 mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

In appearance close to the preceding species; but besides being much smaller it may be readily distinguished by the entire absence of granules. Each elytral puncture appears to be surrounded by four ridges that are thickened at the intersecting corner: towards the sides, however, the transverse ridges become very feeble. The eyes are smaller and with larger facets, and the scales are considerably larger than in either the preceding species or in *muticus*. The specimen described appears to be ♀.

#### POROPTERELLUS, n. g.

*Head* rather large, partially concealed. Eyes small, ovate, widely separated, coarsely faceted. Rostrum short, wide, and almost straight. Scape inserted nearer apex than base of rostrum, the length of funicle; two basal joints of funicle elongate: club large and briefly ovate. *Prothorax* convex, base truncate, sides and apex rounded, apex produced, constriction feeble; ocular lobes obtuse. *Scutellum* not traceable. *Elytra* ovate. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesosternal receptacle* wide, raised in front, emargination feebly semicircular; cavernous. *Metasternum* much shorter than the following segment; episterna not traceable. *Abdomen* moderately large; two basal segments large, the suture between them traceable at sides only, first as long as second and third combined, intercoxal process very wide (wider than third segment), third and fourth combined the length of second or fifth. *Legs* moderately long; posterior coxæ touching elytra; femora moderately thin, feebly dentate, not grooved, posterior curved and passing elytra; tibiæ compressed, almost straight; tarsi not very thin, third joint moderately wide, deeply bilobed, fourth elongate. Subelliptic, convex, squamose, apterous.

Close to *Poropterus*, but the femora dentate, suture between first and second abdominal segments not continuous and mesosternal receptacle differently shaped. The club is unusually large. The specimen described below looks from above



very much like a small *Poropterus*; its head is flat, except the basal portion, which is glabrous and with a slight bluish iridescence.

*POROPTERELLUS INTERCOXALIS*, n. sp. ♀

Black, opaque; antennæ and tarsi dull-red. Not very densely clothed with stout, suberect, brown scales, on the prothorax confined to the punctures, except for four feeble fascicles across middle, and two still more feeble ones at apex; elytra irregularly clothed, the sides almost naked, with feeble fascicles in places; each puncture of under-surface containing a scale; legs rather densely clothed. Head between eyes and base of rostrum feebly clothed.

*Head* rather large, flattened and punctate between eyes, basal portion bald, lightly punctate and with a faint-bluish iridescence, with a feeble median impression, and which is traceable to base; eyes separated from head by a feeble groove posteriorly. Rostrum shorter than prothorax, apex as wide as base, sides feebly incurved to middle, base and sides rather coarsely but not densely punctate, apex moderately-densely punctate; along middle smooth and shining. *Prothorax* as long as wide; with rather large, round, non-confluent punctures. *Elytra* wider than and not twice the length of prothorax, base truncate, shoulders rounded, widest before middle; with series of large, round, deep punctures, of almost equal size throughout; interstices regular, convex, narrower than punctures. *Metasternum* with a shallow elliptic impression on each side. Basal segment of abdomen with two curved series of punctures; those of the first very large and subbasal, but at sides curved round coxæ, those of the second subapical and not continuous to sides; suture between first and second segments deep at sides, marked in middle by a large puncture or fovea, and not traceable elsewhere; second segment with a row of rather large punctures. *Femora* coarsely punctate, feebly dentate, posterior strongly curved and passing elytra for about one-fifth of their length; fourth joint of tarsi noticeably longer than first. Length, 4 mm.; rostrum, 1 mm.; width, 2 mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

The abdominal punctures are very remarkable. The ocular fovea is scarcely distinguishable amidst the surrounding punctures. On the middle of each elytron of the type there is a small and indefinite patch of pale scales.

*GLYPTOPOROPTERUS*, n. g.

*Head* large and partially concealed. Eyes ovate, widely separated, very finely faceted. Rostrum moderately long and

wide, almost straight. Scape inserted nearer apex than base of rostrum, slightly shorter than funicle; two basal joints of the latter elongate; club ovate, subcontinuous with funicle. *Prothorax* subconical, base bisinuate, constriction shallow, ocular lobes almost rectangular. *Scutellum* absent. *Elytra* briefly subovate, base trisinuate. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesosternal receptacle* strongly and suddenly raised, emargination widely transverse; cavernous. *Metasternum* very short; episterna somewhat curved and very narrow, widened and rounded but without an inner projection anteriorly. *Abdomen* not very large; basal segment as long as the three following combined, its suture with second deep at sides but fine across middle, intercoxal process wide; three apical segments depressed, the third and fourth combined shorter than second or fifth, second sloping and slightly longer than fifth. *Legs* long and thin; posterior coxæ touching elytra; femora linear, not grooved, edentate, posterior passing elytra; tibiæ rounded and almost straight; tarsi rather short, third joint wide and deeply bilobed. Ovate, convex, squamose, tuberculate, apterous.

Closely allied to *Poropterus*, but the eyes are very finely faceted, the mesosternal receptacle strongly raised, and the metasternal episterna traceable; from *Microporopterus* it is readily distinguished by the long legs, the posterior femora of which considerably pass the apex of the elytra.

*Poropterus sharpi*, Faust, and *P. cucullata*, Heller (for specimens of these species I am indebted to Dr. Heller), from New Guinea should be referred to this genus.

#### GLYPTOPOROPTERUS ASPER, n. sp.

Black, antennæ and claw-joints almost black. Densely clothed with small thin grey scales; under-surface and legs with longer and rather numerous scales scattered about.

*Head* flat between eyes, but the ocular fovea rather deep; with small and irregular granules; punctures indistinct. Rostrum slightly shorter than prothorax, sides incurved to middle; densely but not very coarsely and almost regularly punctate. Scape inserted very slightly in advance of the middle, the length of six basal joints of funicle; of the latter the first joint is slightly shorter than the second, the fifth and sixth are feebly, whilst the seventh is moderately transverse. *Prothorax* about as long as wide, base slightly bisinuate, sides rather strongly rounded, apex produced, bluntly bifurcate and about one-third the width of base; with numerous small shining granules scattered about and crown-

ing four tubercles that are transversely placed in middle; punctures concealed. *Elytra* considerably (but not suddenly) wider than prothorax, and much less than twice its length, not much longer than wide; punctures large but (except at sides) much obscured by granules and tubercles; with moderately small, numerous, shining granules scattered about and crowning tubercles; of these there are about thirty altogether. *Abdomen* indistinctly punctate. *Femora* indistinctly punctate and granulate, posterior passing elytra for about one-third their length. Length, 10 mm.; rostrum,  $3\frac{1}{2}$  mm.; width,  $5\frac{1}{2}$  mm.

*Hab* —New South Wales (type in Macleay Museum).

A short, broad species, which should be easily recognized by the number of tubercles and the shining and numerous granules: the elytral tubercles are sometimes of considerable size: three on the third interstice, one (postmedian) on the fifth, and one humeral, being the largest; others, however, almost approach them in size. The clothing is almost setose in character. In general appearance it is moderately close to *sharpi* (from New Guinea), but differs in being shorter and broader, the elytral tubercles considerably larger, and the granules of both prothorax and elytra smaller and less crowded together.

#### ILLIDGEA, n.g.

*Head* large, partially concealed; ocular fovea distinct. Eyes ovate, widely separated, moderately faceted. Rostrum rather short and stout, curved. Antennæ rather stout; scape inserted almost in exact middle of rostrum, shorter than funicle; two basal joints of funicle elongate; club briefly ovate, its sutures more or less oblique. *Prothorax* convex, base truncate, sides rounded, constriction deep, ocular lobes obtuse. *Scutellum* small. *Elytra* not much wider than prothorax, posterior declivity abrupt. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesosternal receptacle* transverse, rather strongly raised in front, emargination widely transverse, cavernous. *Metasternum* much shorter than the following segment; episterna not traceable. *Abdomen* moderately large, sutures deep and straight; first segment as long as second to fourth combined, intercoxal process rather narrow, second just perceptibly longer than third, third and fourth combined equal to fifth. *Legs* long; posterior coxæ touching elytra; femora sublinear, neither grooved nor dentate, posterior passing elytra; tibiæ scarcely compressed, almost straight; tarsi stout, third joint not much wider than long, bilobed to basal fourth, fourth elongate. Elliptic, strongly convex, squamose, fasciculate, tuberculate, apterous.

Allied to *Poropterus*, but the three intermediate segments of the abdomen equal or almost so, and with the sutures of the club oblique. *Herymus*, to which it is also allied, has distinct metathoracic episterna.

ILLIDGEA 16-TUBERCULATA, n. sp.

Black, subopaque, antennæ and claws almost black. Upper-surface rather sparsely clothed with distinct reddish-brown adpressed scales, becoming more numerous and subfasciculate on tubercles; those of the two anterior and of two of the median prothoracic tubercles sooty; legs rather densely squamose, on the femora sooty and brown scales intermingled, on apex of femora and on the tibiæ the scales are almost entirely sooty.

*Head* large, base depressed, indistinctly punctate; ocular fovea large. Sculpture of rostrum concealed by clothing but evidently coarsely punctate. Scape noticeably shorter than funicle; first joint of the latter longer and stouter than second, third and fifth subglobular, sixth and especially the seventh strongly transverse. *Prothorax* about as long as wide, sides rounded, base narrowly depressed; each side of apex with a small fasciculate tubercle, four tubercles across middle, the lateral ones small, the median ones large, rounded, and almost double; along middle an opaque median carina, indistinctly terminated in front, but posteriorly forming a distinct scutellar lobe. *Scutellum* longer than wide. *Elytra* scarcely wider than prothorax, and not twice as long; shoulders excavated to receive the posterior angles of the prothorax; with two transverse series consisting of four large rounded tubercles, the first at about one-fourth from base, the second at summit of posterior declivity, a small tubercle on each side just below summit; with a number of mixed, small, and moderately large, distant punctures, becoming very small posteriorly and larger and seriatly arranged on the sides. *Metasternum* and abdomen with small sparse punctures, the apical segment, however, densely punctate. Posterior femora passing elytra for about one-third their length. Length, 9 mm.; rostrum, 3 mm.; width, 4 mm.; depth, 4 mm.

*Hab.*—Queensland: Brisbane (R. Illidge); New South Wales: Wentworth Falls (A. Simson).

The clothing of the specimen described appears to be in perfect preservation, it is dense only on the scutellum, tubercles, legs, and apical segment of abdomen. The tubercles in the middle of the prothorax are impressed in the middle so that they appear to be double; this appearance is enhanced by the clothing of the anterior portion being darker than that

of the posterior. The elytral tubercles appear to be on the third and fifth interstices, the largest being on the third at the summit of the posterior declivity (this part is fully as long as the part preceding it); the tubercles entirely interrupt the sequence of the punctures, so that these are seriate in arrangement only on the sides and posteriorly.

OMYDAUS SUBFASCICULATUS, n. sp.

Moderately densely clothed with ochreous-brown scales, the elytra with sooty scales subfasciculate in arrangement.

*Head* coarsely punctate; with a narrow median carina; eyes not very finely faceted. *Rostrum* inflated near (but not at) base; basal half coarsely punctate, and with a distinct median carina, apical half shining and with small punctures. *Scape* the length of funicle; first joint of the latter distinctly longer than second. *Prothorax* feebly convex, sides very feebly rounded, base bisinuate but apparently widely and rather deeply emarginate; with a moderately distinct median carina; with dense large and round but somewhat irregular punctures; posterior angles produced beyond the median lobe. *Elytra* somewhat angular, shoulders produced; with series of large, deep, oblong punctures, becoming smaller towards sides and much smaller towards apex; interstices punctate, the alternate ones distinctly raised, except posteriorly. *Under-surface* with large punctures. Second abdominal segment very decidedly elevated above third. *Tibiæ* striated, the anterior strongly trisinate beneath. Length, 8 mm.; rostrum, 2 mm. (vix.); width,  $3\frac{1}{2}$  mm.

*Hab.*—New South Wales: Galston (A. M. Lea).

In appearance nearer *fuliginosus* than any here described, but this is in consequence of the raised elytral interstices; otherwise they are very distinctly separated by the rostrum, abdomen, base of prothorax, tibiæ, etc. The rostrum is thinner and less parallel-sided than in any of the others except of the following species. The fascicles on the elytra are confined to the third and fifth interstices except at summit of posterior declivity. In consequence of the subapical tooth of the anterior tibiæ being rather large, and the tibiæ themselves feebly dentate in the middle, they are strongly trisinate beneath.

OMYDAUS CONTRACTUS, n. sp.

Moderately-densely clothed with stoutish scales, varying from a dingy-grey to sooty-black, and subfasciculate on elytra.

*Head* rather coarsely punctate; with a distinct median carina; eyes comparatively coarsely faceted. *Rostrum* sud-

denly bent near base, much wider near (but not at) base than elsewhere; basal third coarsely punctate, apical two-thirds highly polished and almost impunctate. Antennæ rather thin; scape the length of funicle. *Prothorax* feebly convex, sides moderately rounded, suddenly decreasing to apex and rather strongly to base, base feebly sinuate; with a moderately distinct median carina not continuous to base; disc with three distinct subcircular impressions: one on each side of middle, the other in middle of base; with rather large, round, shallow punctures; posterior angles about rectangular. *Elytra* elongate-subcordate, base trisinate, median sinus very feeble, the others small and semicircular; with series of large, deep, oblong punctures, becoming smaller towards the sides, and much smaller posteriorly; alternate interstices scarcely visibly raised. *Under-surface* coarsely punctate. Second abdominal segment decidedly raised above third. *Tibiæ* indistinctly striated, the anterior not very distinctly bisinuate beneath, subapical tooth rather indistinct; tarsi thinner than usual. Length, 7 mm.; rostrum, 2 mm.; width,  $3\frac{1}{4}$  mm.

*Hab.*—New South Wales: Richmond River (A. M. Lea).

The outline of this species is strongly suggestive of *Erithius cariosus*; the sides of the prothorax and elytra rather rapidly decrease to their junction; the elytra at their base are considerably narrower than the widest part of the prothorax, whilst in all the other species they are at least as wide.

#### OMYDAUS IMPRESSICOLLIS, n. sp.

Clothing much as in the preceding species.

*Head* coarsely and irregularly punctate; median carina not traceable; eyes rather finely faceted. Rostrum coarsely and irregularly punctate, punctures dense but finer in front of antennæ than elsewhere. Antennæ stout; scape noticeably shorter than funicle. *Prothorax* slightly longer than wide, feebly convex, base strongly bisinuate, basal two-thirds subparallel; with a distinct median carina on apical three-fourths; disc with shallow but distinct depressions; with dense, large, round, somewhat irregular punctures. *Elytra* with the sides subparallel from basal fifth to apical third; with series of large, deep, suboblong punctures, becoming smaller, rounder, and deeper at sides, and much smaller posteriorly; alternate interstices irregularly elevated and feebly granulate. *Under-surface* coarsely punctate. *Tibiæ* striated, each much wider at than close to apex, anterior feebly bisinuate beneath, the subapical tooth rather small, the terminal hook unusually long. Length, 9 mm.; rostrum,  $2\frac{1}{8}$  mm.; width,  $3\frac{3}{4}$  mm.

*Hab.*—New South Wales (Macleay Museum).

The narrowest of the genus. I cannot find the least trace of a carina on the head of the specimen described, but this is probably a character that is not to be too strictly relied upon, as in *oblongopunctatus* one specimen has the head carinate, whilst another has not. The depressions on the prothorax, although not very deep, are sufficiently distinct; there are three subbasal ones, and a semicircular one (at its posterior end rather deeper than elsewhere) on each side of the carina.

OMYDAUS CONFUSUS, n. sp

Clothing somewhat as in *oblongopunctatus*.

*Head* coarsely punctate; with a feeble median carina; eyes moderately faceted. Rostrum almost parallel-sided; coarsely punctate on basal half, not very coarsely on apical. Antennæ rather stout; scape noticeably shorter than funicle. Shape much as in *oblongopunctatus*, but rather narrower; the *prothorax* with larger and deeper punctures and the median carina more pronounced; the *elytra* with smaller punctures, much less clearly defined and more or less confluent. Length,  $7\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.

*Hab.*—New South Wales: Tamworth (A. M. Lea).

Close to *oblongopunctatus* but smaller and narrower, and with different punctures. The elytral interstices are feebly connected in places, causing feeble transverse subtubercular spaces; the anterior tibiae are not very strongly bisinuate, and are without the median tooth of *oblongopunctatus*, the sub-apical tooth, however, is rather distinct.

PSEUDOMYDAUS, n. g.

*Eyes* rather small, coarsely faceted. Rostrum rather stout. Scape much shorter than funicle, inserted almost in middle. *Prothorax* longer than wide. *Elytra* more than twice the length of prothorax. *Abdomen* with the second segment almost as long as the two following combined, its suture with first deep at sides only and curved across middle. *Legs* moderately long; femora stout, edentate. Other characters as in *Omydaus*.

The species described below is not unlike a small variety of *Omydaus impressicollis*, but the characters given above are so much at variance with those of *Omydaus* that it certainly should not be placed in that genus.

PSEUDOMYDAUS TENUIS, n. sp.

Black, antennæ and tarsi of a dingy-red. Moderately-densely clothed with reddish-brown and rather elongate scales, on the prothorax one in each puncture; elytra in addition

with minute scales on the interstices, a distinct oblique fascia of whitish scales at summit of posterior declivity, and a small round spot of similar scales on third interstice at one-third from base: under-surface and legs with denser and longer clothing than on upper-surface.

Long, thin, and subparallel. *Head* moderately large, somewhat coarsely and irregularly punctate; ocular fovea wide, but shallow and indistinct. Rostrum rather stout, the length of prothorax, moderately curved, sides feebly incurved to middle, base (but not extreme base) wider than apex; coarsely punctate throughout, but behind antennæ the punctures subseriate in arrangement. Antennæ rather stout; scape inserted just perceptibly nearer apex than base, the length of the three following joints: first joint of funicle slightly stouter and longer than second, third to seventh subcylindrical and feebly transverse; club briefly ovate. *Prothorax* slightly longer than wide, base strongly bisinuate, basal four-fifths subparallel, towards apex suddenly but not largely narrowed; with dense and moderately large and round but rather shallow punctures; surface somewhat uneven; with a feeble median carina; walls slightly inwardly oblique. *Elytra* not much wider than and about twice and one-half the length of prothorax, sides subparallel, apex widely rounded and not much narrower than base, base strongly trisinate, shoulders produced; with series of large, round, deep, subapproximate punctures, not much smaller posteriorly than elsewhere; interstices punctate, indistinctly and very feebly granulate, narrower than series of punctures, the alternate ones slightly raised. *Pectoral canal* deep and wide, terminated at base of anterior coxæ. *Meso-sternal receptacle* raised in front, sides oblique, apex much wider than base and almost truncate; cavernous. *Meta-sternum* moderately large, but considerably shorter than the following segment; densely punctate; episterna rather narrow, each with a series of punctures. *Abdomen* long and coarsely punctate, two basal segments depressed in middle in ♂, feebly convex in ♀, first as long as second and third combined, intercoxal process wide and almost truncate, second almost as long as third and fourth combined and considerably longer than fifth. *Femora* stout, edentate, indistinctly (the anterior not at all) grooved, posterior scarcely extending to apical segment, densely punctate; tibiæ rather short, in addition to the terminal hook each with a small subapical tooth; tarsi rather narrow, third joint not much wider than second and bilobed for scarcely half its length, fourth long, thin, and setose. Length,  $6\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.

*Hab.*—New South Wales: Burrawang (T. G. Sloane), Illawarra (Macleay Museum).



A long, thin species, somewhat like the European *Plinthus caliginosus*. The prothorax is flattened, but is rendered uneven by rather feeble depressions: at the base three of these are distinct, the median one divides on each side of the median line and is continued on each side to near apex, the lateral ones are traceable to about the middle. The subapical tooth of the anterior tibiae in the ♂ is rather large.

I have described the clothing of the most distinctly marked specimen; of two others under examination one has the elytra almost uniformly clothed, whilst the other has the small whitish spots absent and the postmedian fascia just traceable.

#### POROPTERINUS, n. g.

*Head* almost concealed by prothorax. *Eyes* ovate, widely separated, coarsely faceted. *Rostrum* moderately long and not very stout, curved. *Scape* inserted closer to apex than base of rostrum, shorter than funicle; second joint of funicle elongate, the first joined to the scrobe by a small lateral node at the base; club ovate, subcontinuous with funicle. *Prothorax* transverse, constriction deep and continuous across summit, ocular lobes obtuse, base bisinuate. *Scutellum* distinct. *Elytra* wider than prothorax, shoulders produced, sides strongly arcuate towards apex. *Pectoral canal* deep, terminated between four anterior coxae, encroached upon by the anterior pair. *Mesosternal receptacle* V-shaped, depressed in front; open. *Metasternum* shorter than the following segment; episterna rather narrow. *Abdomen* large; two basal segments large, first scarcely as long as second and third combined, its suture with second curved at middle, third and fourth combined longer than second or fifth, their sutures deep and wide. *Legs* moderately long; femora moderately stout, neither grooved nor dentate, posterior not extending to apex of abdomen; tibiae slightly compressed, bisinuate beneath; tarsi slender, almost glabrous above, third joint not much wider than second but deeply bilobed, fourth elongate; claws rather long and thin. Subovate, depressed, squamose, apterous.

A remarkable genus, which belongs to the *Poropterus* group; it is not close to any with which I am acquainted. The mesosternal receptacle sloping downwards (instead of upwards) to the front is a most unusual feature; the first joint of the funicle is also remarkable.

#### POROPTERINUS TRILOBUS, n. sp.

Blackish-brown, antennae and tarsi of a rather pale-red. Very densely clothed with muddy-grey and sooty scales (which entirely conceal the punctures), interspersed with stouter and

suberect scales, which form feeble fascicles on the alternate interstices of the elytra.

*Head* with dense but concealed punctures. *Rostrum* densely punctate but punctures concealed except in front of antennæ; scrobes deep in front but abruptly turned beneath, at sides scarcely traceable to eyes. *Funicle* with the first joint stouter and considerably shorter than second, third to seventh transverse. *Prothorax* transverse; divided into three lobes by the deep anterior constriction, and a still deeper and wider median depression, basal lobes larger than the anterior one; with dense, deep, and rather large punctures, which are entirely concealed, as is also a feeble carina along the middle of the median depression. *Elytra* considerably wider than prothorax and more than twice as long, widest near base, then slightly diminishing in width to apical two-thirds, which are strongly arcuate; seriate-punctate, punctures large, subquadrate, entirely concealed, third, fifth, and seventh interstices decidedly elevated and causing the base to appear multisinuate, the third and fifth broken up into feeble tubercles beyond the middle. *Under-surface* evidently with large punctures, but which are entirely concealed, as are also the sutures of the metasternal episterna. *Posterior femora* (although somewhat longer than the others) not extending to apex of penultimate segment. Length,  $6\frac{3}{4}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $3\frac{1}{4}$  mm.

*Hab.*—New South Wales: Cootamundra, Forest Reefs (A. M. Lea).

The strong impressions on the prothorax (dividing it into three distinct lobes) and the peculiar shape and sculpture of the elytra give this species a remarkable appearance, so that, although the derm and punctures are hidden, the species is a very distinct one. The four specimens under examination were taken from under very old logs.

#### POROPTERCULUS, n. g.

*Head* convex, not concealed. *Eyes* rather large, ovate, not very widely separated, rather coarsely faceted. *Rostrum* moderately long and rather wide, feebly curved; a shallow groove on each side above scrobe. *Antennæ* moderately stout: scape inserted nearer apex than base of rostrum, the length of funicle; basal joint of the latter rather long; club ovate, subcontinuous with funicle. *Prothorax* transverse, sides rounded, base almost truncate, constriction not traceable, ocular lobes obtuse. *Scutellum* small. *Elytra* ovate, shoulders rounded. *Pectoral canal* deep and wide, terminated between front and intermediate coxæ. *Mesosternal receptacle* feebly raised, crescent-shaped, emargination widely transverse;

cavernous *Metasternum* short; episterna narrow but traceable throughout. *Abdomen* with straight sutures; first segment as long as second and third combined, intercoxal process rather narrow, third and fourth combined slightly longer than second and fifth. *Legs* moderately long; posterior coxæ almost touching elytra; femora not stout, grooved, edentate, posterior terminated before apex of abdomen; tibiæ rather long and almost straight; tarsi moderately long, third joint wide and deeply bilobed, fourth elongate. Elongate-ovate, strongly convex, striate, squamose, winged.

Evidently belongs to the *Poropterus* group, but I know of no closely related genus.

POROPTERCLUS SUBNITIDUS, n. sp.

Piceous-brown and somewhat shining, antennæ and tarsi paler. Not densely clothed with depressed and suberect sooty scales, intermingled with a few white ones, and which are more numerous on the under-surface than elsewhere.

*Head* convex; indistinctly punctate. Rostrum the length of prothorax, sides very feebly incurved to middle; basal half with coarse, partially-concealed punctures; apical half shining and moderately punctate, an impunctate line along middle. First joint of funicle obconical, the length of second and third combined and much wider, third to seventh transverse. *Prothorax* lightly transverse, base not much wider than apex; with dense, round, deep, clearly cut, non-confluent punctures, suddenly becoming much smaller on apical fourth. *Elytra* not much wider than, about once and two-thirds the length of, and outline subcontinuous with, that of prothorax; punctate-striate, punctures indistinct, although rather large; interstices regular, convex, shining, slightly narrower than striæ. *Abdomen* with dense, round, deep, clearly-cut, scarcely-concealed punctures. *Femora* with dense but rather small punctures, posterior extending to apical segment. Length,  $2\frac{1}{4}$  mm.; rostrum,  $\frac{2}{3}$  mm.; width, 1 mm.

*Hab.*—Western Australia: King George Sound (Australian Museum).

The elytral punctures are indistinct, except towards the sides, but are not concealed by the clothing, which is almost absent, except posteriorly.

PTEROPOROPTERUS, n. g.

*Head* convex, partially concealed. Eyes ovate, very finely faceted. Rostrum not very long and rather wide, lightly curved, a shallow groove on each side above scrobe. Antennæ moderately stout; scape shorter than funicle, inserted nearer

apex than base of rostrum; two basal joints of funicle moderately long; club ovate. *Prothorax* as long as wide, sides rounded, base bisinuate, constriction slight, ocular lobes almost rectangular. *Scutellum* minute. *Elytra* ovate, convex, each separately rounded at base. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesos-teral receptacle* raised, almost crescent-shaped, emargination rather widely transverse: cavernous. *Metasternum* short: episterna not traceable. *Abdomen* with distinct sutures; first segment rather large, as long as second and third combined, apex incurved, intercoxal process rounded and rather narrow: third and fourth combined the length of fifth and slightly shorter than second. *Legs* rather long; posterior coxæ touching elytra; femora feebly grooved, edentate, posterior just passing elytra: tibiæ rounded, almost straight; tarsi rather short, third joint wide and deeply bilobed. Elongate-ovate; strongly convex, squamose, nontuberculate, winged.

Allied to *Poropterus*, but winged, the elytra separately rounded at the base, the eyes very finely faceted, and the femora feebly grooved.

PTEROPOROPTERUS LACUNOSUS, n. sp.

Of a rather dark reddish-brown. Moderately-densely (dense on legs and rostrum) clothed with large, soft, dingy, whitish scales; prothorax and elytra, in addition, with stout, suberect, sooty setæ.

*Head* and rostrum coarsely punctate, but punctures scarcely traceable. Rostrum the length of prothorax, sides incurved to middle: punctures unconcealed only at extreme apex. Scape inserted two-fifths from apex of rostrum, the length of six basal joints of funicle; first joint of funicle stouter and almost twice the length of second, fourth to sixth feebly, seventh strongly transverse. *Prothorax* convex, base lightly bisinuate, apex produced and rounded: with dense, round, and rather large, but shallow punctures. *Elytra* elongate-ovate, not much wider than and about twice the length of prothorax; with regular series of large, sub-quadrate, clearly-defined and crowded, but not confluent, punctures: interstices much narrower than punctures, each appearing as a series of feeble granules (a granule at each corner of a puncture). *Under-surface* coarsely but not clearly punctate. Length, 6 mm.: rostrum,  $1\frac{2}{3}$  mm.; width,  $2\frac{2}{3}$  mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

On the elytra the clothing (except on shoulders and posterior declivity) is almost confined to the interstices, on the

prothorax it forms a feeble (but distinct) median line and a much more feeble line on each side. The dark setæ are confined to the upper-surface, but (except those at apex of prothorax) are almost invisible elsewhere than from the side. The sides of the prothorax appear granulate through the clothing, but this appearance is caused by the sides of the punctures being partially exposed; on the elytra, however, there are true granules, each of which bears a seta; the interstices between puncture and puncture (on the elytra) are actually wider (though less pronounced) than between row and row.

*TENTEGIA QUADRISERIATA*, n. sp.

Black, legs piceous-brown, antennæ paler. Clothing as in *anopla*.

*Head* with irregular punctures. Rostrum with large round punctures, arranged in four regular series behind antennæ, but without leaving elevated ridges. *Prothorax* with dense, round, large, shallow punctures; apex more produced than usual, with the extreme apex feebly notched and the constriction less pronounced; a feeble median carina from apex to behind middle. *Elytra* subcordate; subtuberculately produced behind shoulders; with series of very large punctures or foveæ, becoming larger at sides and smaller towards apex; interstices with shining somewhat distant granules, largest in vicinity of shoulders, third, fifth, and seventh scarcely visibly raised but with more distinct granules than the others. *Sterna* densely and irregularly punctate. Two basal segments of abdomen with round shallow foveæ, those on the second forming two complete rows. *Femora* edentate, with large shallow punctures, posterior just passing apex of elytra; tibiæ grooved, lower subapical tooth distinct but upper obsolete; third tarsal joint noticeably wider than second and rather deeply bilobed. Length, 5 mm.; rostrum,  $1\frac{1}{4}$  mm.; width,  $3\frac{1}{4}$  mm.

*Hab.*—Queensland: Cairns, Rockhampton (Macleay Museum).

The shape (in consequence of the feeble notch at apex of prothorax) resembles that of the species belonging to *Microporopterus*; the femora are stouter with the third tarsal joint wider than usual.

*TENTEGIA TORTIPES*, n. sp.

Black, legs and antennæ piceous. Clothed with yellowish stout setæ or setose scales, very sparse on elytra, where, however, there are small and obscure patches of small white scales, and which are sparsely and irregularly distributed.

*Head* with dense and round but (for the genus) small punctures. Rostrum densely punctate between antennæ and apex, without distinct punctures behind antennæ, but with five very distinct carinæ, the median one of which is perfectly straight, but the others slightly waved. *Prothorax* with dense, short, shining ridges of unequal lengths; the sides punctate. *Elytra* subcordate, base almost perfectly straight, sides scarcely inflated behind shoulders; punctate-striate, the striæ wide and rather shallow, the punctures (except towards sides, where they are rather large) small, distant, and comparatively indistinct: interstices feebly shining and with small (almost seriate) punctures, the second and fourth not quite continuous to base, but the second feebly raised near base and the fourth very distinctly raised about summit of posterior declivity, the others there being but little raised; declivity itself abrupt and almost inwardly oblique. *Sterna* irregularly and not coarsely punctate. *Mesosternal receptacle* with very thin walls. Two basal segments of abdomen with (for the genus) small and not at all foveate punctures, those on the second in two very irregular series. *Legs* (especially the posterior) longer and thinner than usual; femora edentate, with shallow punctures, the posterior strongly arcuate; tibiæ with eight distinct grooves, with a feeble subapical tooth below but a very distinct one above, posterior very decidedly curved both longitudinally and outwardly; third tarsal joint wider than second and rather deeply bilobed. Length,  $7\frac{1}{2}$  mm.; rostrum,  $2\frac{1}{2}$  mm.; width, 5 mm.

*Hab.*—Northern Territory: Port Darwin (type in Macleay Museum).

A remarkable species: the elytra without granules, the fourth interstice very decidedly raised, the posterior declivity very abrupt, the punctures of the two basal segments of abdomen comparatively small, long and crooked hindlegs, etc. Only the sides of the prothorax are distinctly punctate, the disc being covered with numerous short shining ridges of unequal lengths (becoming granules towards apex), but with a more or less inwardly oblique trend, the whole being reminiscent of *Neomelanterius carinicollis*. The length given is that of a straight line from apex of prothorax to apex of elytra, but along the curve of the back the distance between the same points is  $13\frac{1}{2}$  mm.

#### ANILAU'S COSTIROSTRIS, n. sp.

♂. Reddish-brown, antennæ and tarsi paler. Moderately densely and uniformly clothed with short, stout scales, interspersed with longer and suberect ones, varying from dingy-grey to sooty, but giving the surface a dingy-brown appearance.

*Head* with dense but almost concealed punctures. Rostrum coarsely punctate throughout, but especially at base, behind antennæ with three very distinct, shining, slightly-waved ridges; wider at apex than at base. Funicle with the first joint stouter and slightly longer than second. *Prothorax* almost twice as wide as long; with coarse, deep, partially concealed punctures; with a narrow (slightly dilated in middle), shining median carina. *Elytra* not much longer than wide; with series of rather large, rounded punctures; interstices gently convex, wider than punctures near suture, but not as wide as sides. *Under-surface* and *legs* coarsely punctate. Length,  $3\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{3}$  mm.; width,  $2\frac{1}{2}$  mm.

♀. Differs in having the rostrum longer and thinner, wider at base than at apex, less coarsely punctate but punctures more distinct, the three basal costæ wider and much less distinct, and the antennæ slightly nearer the middle.

*Hab.*—Queensland: Endeavour River, Cairns (Macleay Museum).

Differs from *sordidus* in being differently and much less densely clothed, prothorax wider and more suddenly contracted anteriorly; elytral interstices regular, and the whole body rather more depressed. The teeth of the four posterior femora are slightly larger, whilst those of the posterior are not quite so large as in *sordidus*.

#### MYRTESIS NASUTA, n. sp.

♀. Dingy-black, rostrum piceous-brown, antennæ red. Clothing as in *caligata* but much sparser, except on the legs and metasternal episterna.

*Head* densely punctate. Rostrum very long and thin, terminated considerably beyond posterior coxæ, its apex scarcely dilated; with distinct but rather small punctures and which are evenly and sparsely distributed, except that they become coarse on the flanks near apex. Antennæ very thin; scape inserted slightly nearer base than apex; two basal joints of funicle equal in length. *Prothorax* as in *caligata* except that the tubercular elevations are less pronounced, more numerous and irregular, and the excavated portion of each larger, so that they frequently look like small elevated rings; with a median carina which is elevated in front and traceable to base. *Elytra* as wide as long, depressed along suture; with almost regular series of large punctures, the interstices with a few feeble hollow tubercles, appearing like slightly-raised rings, and few of which are seta-bearing. *Pectoral canal* extending to apex of basal segment of abdomen.

*Abdomen* with foveæ as in *caligata*, but of larger size. Length, 7 mm.: rostrum,  $4\frac{1}{2}$  mm.: width, 4 mm.

*Hab.*—Queensland: Mount Dryander (type in Mr. A. Simson's collection).

This species differs from *caligata* in having the rostrum longer (it is actually longer than the greatest elytral width), thinner, less dilated at apex, and with smaller punctures, the antennæ inserted nearer base than apex (all possibly sexual characters) with the two basal joints of the funicle equal in length, prothorax differently sculptured, elytra with smaller, much sparser, and hollower tubercles, very few of which are seta-bearing; but in particular by the pectoral canal extending to the apex of the basal segment of the abdomen instead of terminating before its middle. The species strongly resembles *caligata*, and I may be wrong in regarding it as new; if it is a female of *caligata*, then the two specimens of that species that are known to me must be males, although they have every appearance of being females.

#### MYRTESIS PULLATA, n. sp.

♂. Dingy-black, rostrum piceous-brown, antennæ red. Densely clothed with pale muddy-brown setose scales, mingled (especially on prothorax) with ochreous ones.

*Head* densely punctate. Rostrum comparatively stout, terminated just before abdomen, parallel-sided except near apex: with large punctures close together, in four series behind antennæ, in front more crowded and irregular. Antennæ thin; scape inserted two-fifths from apex, two basal joints of funicle equal. *Prothorax* densely and coarsely punctate, with numerous feeble and hollow tubercular elevations: with a distinct and slightly shining carina, which is continuous to base and apex. *Elytra* as wide as long, not depressed along suture: with series of large punctures or foveæ, which are sometimes almost hidden by the clothing; interstices with almost regular series of small hollow shining granules: across the median half with feeble and feebly fasciculate tubercles. *Pectoral canal* terminated at abdomen. Two basal segments of *abdomen* with very large punctures or foveæ, forming three irregular rows on the first and two on the second. Length,  $5\frac{1}{2}$  mm.: rostrum, 2 mm.; width,  $3\frac{1}{4}$  mm.

♀. Differs in having the rostrum much longer ( $2\frac{1}{2}$  mm.) and thinner, terminated at abdomen, punctures much smaller and crowded together: antennæ thinner, scape inserted in exact middle of rostrum and club more elongate.

*Hab.*—Queensland: Mount Dryander, Burdekin River (types in Mr. A. Simson's collection).



This is the only species in which I am acquainted with both sexes. The clothing and tubercles are different to those of *nasuta* and *caligata*, and the pectoral canal is shorter; the most readily seen difference, however, is the absence of a sutural depression. The type male and female have been returned to Mr. Simson, a second female being retained by myself.

TETENGIA, n. g.

*Head* rather large, partially concealed. *Eyes* ovate, not very widely separated, coarsely faceted. *Rostrum* rather short and stout, feebly curved. *Antennæ* stout, scape shorter than funicle, inserted nearer base than apex; two basal joints of funicle elongate, the others transverse and increasing in width; club stout, continuous with funicle. *Prothorax* widely transverse, base truncate, sides at base excavated to receive femora, constriction absent; ocular lobes very obtuse. *Scutellum* absent. *Elytra* closely applied to, with the outline continuous with, that of prothorax. *Pectoral canal* deep and wide, terminated between intermediate coxæ. *Mesosternal receptacle* very feebly raised in front and depressed at the sides, walls equal throughout, emargination semicircular; cavernous. *Metasternum* much shorter than the following segment; episterna rather narrow but distinct throughout. *Abdomen* moderately large; first segment as long as the three following combined, second depressed below first, its sutures straight, third and fourth combined distinctly longer than second or fifth, their sutures deep and wide. *Legs* short and stout; femora deeply grooved to receive tibiæ, edentate, posterior terminated before apex of abdomen; tibiæ very wide, outer edge strongly rounded and thin, inwardly excavated to receive tarsi; tarsi rather short and stout, third joint not much wider than second and not bilobed to base, fourth long and very thin; claws feeble. Briefly ovate, feebly convex, nontuberculate, apterous.

The shape of the prothorax, abdomen, and legs render this a highly remarkable genus; its true position I am very doubtful of, but it appears to approach *Tentegia*.

TETENGIA SOLENOPIA, n. sp.

Blackish-brown or dark-brown; prothorax pale, antennæ red. Prothorax moderately-densely clothed with ochreous scales, with a few white ones in small spots; elytra with whitish scales, not very densely distributed, and frequently condensed into small spots, second interstice at apex with similar scales to those on prothorax.

*Head* with dense, regular and not very large punctures; each eye encircled by a narrow impression. Rostrum coarsely punctate in ♂, moderately coarsely in ♀. *Prothorax* almost twice as wide as long, sides strongly but not suddenly rounded, apex less than half the width of base; with dense, round, uniform, clearly-defined punctures; a very feeble impunctate space along middle. *Elytra* not much longer than wide, very little wider than prothorax, widest immediately behind base, thence gently and continuously rounded to apex; striate-punctate, punctures deep oblong and feebly connected; interstices flat, wider than striæ, rather densely punctate, third to seventh terminating separately instead of the third and seventh and fourth and sixth being conjoined; flanks of basal half inwardly oblique curved and polished. *Under-surface* with punctures increasing in size, from rather small on the mesosternal receptacle, to large on the first segment of abdomen; second segment of the latter strongly and suddenly depressed below first, with a series of very large punctures becoming foveæ (four) in the middle; third and fourth each with a row of small punctures, fifth densely punctate. *Legs* densely punctate; femora oblong, thin at base, their grooves running out at the base, posterior not extending to apical segment; tibiæ lightly striated. Length, 4 mm.; rostrum, 1 mm.; width, 3 mm.

*Hab.*—Western Australia: King George Sound (Australian Museum), Bridgetown (A. M. Lea).

The punctuation of the under-surface is remarkable. Owing to the peculiar interstices each elytron appears to be supplied with a preapical callus, although such is not the case. The ciliation of the ocular lobes is silvery and remarkably short. The clothing appears to be easily abraded.

#### TEPALICUS, n. g.

*Head* excavated towards base, partially concealed. Eyes rather coarsely faceted. Rostrum long, thin, and curved. *Antennæ* moderately thin; scape inserted nearer apex than base of rostrum, the length of funicle; two basal joints of the latter elongate; club elongate-ovate, subcontinuous with funicle. *Prothorax* transverse, sides lightly rounded, base bisinuate, walls vertical, constriction slight, ocular lobes obtuse. *Scutellum* minute. *Elytra* subcordate, considerably wider than prothorax. *Pectoral canal* deep and narrow, terminated between intermediate coxæ. *Mesosternal receptacle* scarcely raised, walls not stout and of equal thickness throughout, emargination U-shaped; cavernous. *Metasterum* short; episterna narrow but distinct throughout and divided from the

middle by deep sutures. *Abdomen* moderately large, sutures distinct, that between first and second segments feeble but traceable across middle, first as long as second and third combined, intercoxal process not very wide; third and fourth combined longer than second or fifth. *Legs* moderately long; posterior coxæ touching elytra; femora not stout, feebly grooved, edentate, posterior just passing elytra; tibiæ feebly compressed, almost straight: tarsi long, thin, and shining, third joint very little wider than second and bilobed for about half its length, fourth elongate. Ovale, moderately convex, squamose, nontuberculate, apterous.

Closely allied to *Paleticus*, but the femora feebly grooved and edentate, the mesosternal receptacle U-shaped; the abdomen with the apical segments not suddenly narrowed by elytra, the suture between first and second traceable across middle, and the combined length of the third and fourth greater than that of the second or fifth.

TEPALICUS SEMICALVUS, n. sp

Black, antennæ and tarsi of a rather pale-red. Densely clothed with muddy-brown scales, thickly interspersed with dark fawn-coloured erect scales that form feeble fascicles on the prothorax and elytra.

*Head* slightly convex, semicircularly depressed towards and naked at base; ocular fovea not traceable. *Rostrum* long, rather strongly curved, parallel-sided: with strong punctures in grooves on basal half, apical half polished and minutely punctate. *Scape* inserted at apical third: second joint of funicle considerably longer than first, the others transverse. *Prothorax* moderately transverse, base strongly bisinuate; punctures small, sparse, and entirely concealed: from middle to apex a distinctly elevated but narrow and squamose carina. *Elytra* subcordate, about once and one-half the width and twice and one-half the length of prothorax, base trisinuate, shoulders rounded, behind shoulders subparallel to apical third; with rather large round punctures, not very close together, and subgeminat in arrangement, becoming very small posteriorly: alternate interstices irregularly and very feebly raised. *Metasternum* with a transverse median impression, notched in the middle anteriorly. *Intercoxal process* of abdomen with a semicircular impression on each side: punctures (if present) entirely concealed. Length, 7 mm.; rostrum, 2½ mm.; width, 4 mm.

*Hab.*—Queensland: Cairns (Macleay Museum)

In appearance this species rather strongly resembles *Paleticus frontalis*. The prothorax could scarcely be called

fasciculate, as the erect scales, though thickly distributed, are nowhere in small patches; on the elytra the fascicles are almost confined to the third, fifth, and seventh interstices; the stout scales are very thickly distributed on the legs.

OUROPOROPTERUS, n. g.

*Head* moderately large, not visible from above. Eyes ovate, widely separated, finely faceted. Rostrum moderately long and rather thin, moderately curved; a shallow groove on each side above scrobe. Antennæ thin; scape inserted nearer apex than base of rostrum, the length of funicle: two basal joints of funicle elongate; club ovate, subcontinuous with funicle. *Prothorax* transverse, subconical, sides rounded, base bisinuate, constriction feeble, ocular lobes obtuse. *Scutellum* small. *Elytra* subovate, base very little under than base of prothorax and trisinuate. *Pectoral canal* deep and moderately wide, terminated between four anterior coxæ. *Mesosternal receptacle* U-shaped, walls of equal thickness throughout but rather strongly raised posteriorly; feebly cavernous. *Metasternum* considerably shorter than the following segment: episterna narrow. *Abdomen* rather large; sutures distinct: first segment not much longer than second, its suture with it curved, intercoxal process rather narrow, second slightly longer than third and fourth combined and considerably longer than fifth. *Legs* not very long; femora not grooved, indistinctly dentate, posterior terminated before apex of abdomen: tibiæ compressed, feebly bisinuate; tarsi moderate, third joint wide and deeply bilobed, fourth moderately long but not thin. Elliptic, convex, squamose, tuberculate, apterous.

Very close to (*Emethylus*, from which it differs, especially in the shoulders and absence of wings: the ocular lobes are also much less prominent, and the mesosternal receptacle is differently shaped. The latter organ is decidedly raised, but slopes *down* to the front instead of *up*, as is usually the case; seen from behind (or when probed) it appears to be cavernous, but when viewed from in front it appears to be almost open.

OUROPOROPTERUS DIURUS, n. sp.

♂. Dark reddish-brown, antennæ and claw-joints somewhat paler. Very densely and almost uniformly clothed, with rather stout, dark fawn-coloured scales, subfasciculate at apex of prothorax, and absent only at extreme apex of rostrum.

*Head* with dense, small, entirely-concealed punctures. Rostrum the length of prothorax, base noticeably wider than apex, sides incurved to middle; densely and rather coarsely

punctate, punctures concealed except at apex. Scape inserted at apical third: first joint of funicle as long as second and third combined. *Prothorax* moderately transverse, apex produced and bluntly bifurcate; with small and rather sparse and dense and minute punctures, all of which are concealed. *Elytra* about thrice the length of prothorax and at base very little wider, widest before middle, base lightly trisinate, sides strongly rounded, towards apex strongly arcuate, each separately produced at apex; with series of rather large and rounded, or subquadrate punctures, becoming smaller posteriorly; interstices in places subtuberculate, the alternate ones feebly raised; suture on basal half with small, shining granules. *Under-surface* with minute, concealed punctures. *Femora* densely punctate, minutely dentate, posterior just passing apex of third abdominal segment. Length, 8 mm.: rostrum, 2 mm.; width,  $4\frac{1}{6}$  mm.

♀. Differs in having the rostrum rather longer and thinner, squamose at base only, shining and lightly punctate elsewhere, and the scape inserted two-fifths from apex of rostrum.

*Hab.*—New South Wales: Illawarra (Macleay Museum).

There are about eighteen small tubercles on the elytra, nearly all of which are placed about the middle. The femoral teeth are acute, but very small, and are invisible from all directions until the clothing is removed.

#### BRACHYPOROPTERUS VERMICULATUS, n. sp.

Black, apex of rostrum almost black, antennæ and claw-joints pale-red. Very densely clothed with fawn-coloured scales, paler on posterior declivity and darker on three apical segments of abdomen than elsewhere; elongate stout scales scattered about (rather thickly on the under-surface and legs) and forming numerous feeble fascicles on prothorax and elytra.

*Head* very feebly convex; punctures concealed; forehead feebly bisinuate. Rostrum the length of prothorax, sides feebly incurved to middle; basal half with coarse concealed punctures, apical half shining and with moderately strong punctures. Scape inserted slightly nearer apex than base of rostrum, not much shorter than funicle; first joint of funicle slightly longer than second, seventh transverse. *Prothorax* lightly transverse; with a number of tubercular elevations all of the same height near apex forming a feeble O, at base forming a feeble M (but the median V very distinct), a small tubercle on each side of middle and three moderately long ones on each flank; punctures concealed except a few on flanks. *Elytra* not much wider than prothorax and not twice as long, deeper than wide; posterior declivity steep and longer

than the rest of elytra, crowned on each side with an obtuse transverse tubercle; third and fifth interstices distinctly raised from base to basal third (less distinctly raised near apex); with several feeble tubercles about middle, a distinct oblique one on fifth interstice; with series of rather large round punctures, not very close together, and more or less interrupted by tubercles; a few small, shining, sutural granules on basal half. Punctures of *under-surface* entirely concealed. Posterior *femora* extending almost to apex of abdomen. Length,  $6\frac{2}{3}$  mm.; rostrum,  $2\frac{1}{2}$  mm.; width,  $3\frac{2}{3}$  mm.

*Hab.*—New South Wales: Clarence River (Macleay Museum).

The elongate tubercular elevations and short deep elytra give this species a most peculiar appearance. It differs from *apicigriseus* in having much paler and more uniform clothing. The rostrum longer, eyes smaller and rather more coarsely faceted, posterior declivity considerably longer, pectoral canal longer and terminating at hindmargin of middle coxæ instead of in a somewhat more advanced position, mesosternal receptacle narrower and second segment of abdomen not transversely impressed, etc.

EURYPOROPTERUS TENUIFASCIATUS, n. sp.

Black, antennæ (club infusate) and claw-joints of a rather pale-red. Moderately densely clothed with small, round, brown scales; on prothorax a few elongate ones scattered about and moderately dense at sides and apex, each side of middle with a small, round, whitish spot; each elytral puncture with a moderately large scale, longer and paler scales scattered about, and, to the naked eye, appearing to form an oblique row of three small dots on each elytron; a distinct and very narrow white oblique fascia on each side, at summit of posterior declivity, extending from sixth interstice almost to suture. Under-surface, head, and basal half of rostrum sparsely squamose, pectoral canal moderately squamose; legs feebly ringed. Ciliation silvery and unusually minute.

*Head* very feebly convex; forehead widely and shallowly but distinctly bisinuate; indistinctly punctate; ocular fovea small and round. Rostrum the length of prothorax, sides lightly incurved to middle; with very feeble series of rather small punctures; apical half shining. Funicle with the second joint distinctly longer than the first, none of the others transverse. *Prothorax* rather strongly transverse, posterior angles produced; surface uneven from rather large scattered punctures; feebly (more distinctly at base) de-

pressed along the middle: across middle with several very feeble tubercular elevations. *Elytra* wider than prothorax and (along middle) about twice as long, not much longer than wide: shoulders oblique and produced on to prothorax; with several feeble tubercular elevations, more noticeable on third interstice than elsewhere; suture towards base with a few depressed shining granules; with series of large (moderately small posteriorly), round, rather deep, and distant punctures: interstices not separately convex. *Mesosternal receptacle* as long as wide, each side strongly emarginate (or foveate). *Abdomen* with small sparse punctures: first segment as long as the three following combined, intercoxal process with a foveate impression on each side; suture between first and second segments deep at sides, in middle with a large transverse fovea: second as long as third and fourth combined. *Femora* distinctly grooved, the four anterior with a thin but acute and distinct tooth, posterior just passing apex of elytra. Length, 6 mm.: rostrum,  $1\frac{3}{4}$  mm.: width,  $3\frac{1}{2}$  mm.

*Hab.*—New South Wales (A. M. Lea).

The mesosternal receptacle and abdomen are at variance with the other species of the genus, but the insect is so evidently allied to *annulipes* that it was thought advisable not to generically separate it. The specimen described (probably a female) is from the Tweed or Richmond River; it was put aside in spirits with some duplicates for over four years without apparent injury to the remarkable clothing. Near the base of the elytra there is a short groove, formed by punctures, such as is often seen behind the posterior coxæ.

#### EXITHIUS FERRUGINEUS, n. sp.

Very densely clothed with ochreous-brown scales of a uniform tint throughout, except that the scutellum bears whitish scales. Fascicles on each of the elytral tubercles and six on prothorax.

*Head* densely and somewhat rugosely punctate; forehead very distinctly but not deeply trisinate. Rostrum shining; coarsely punctate at base, densely but not coarsely elsewhere. Antennæ inserted almost in exact middle. *Prothorax* feebly transverse, sides moderately rounded, towards apex rather suddenly and strongly narrowed; with dense concealed punctures. *Elytra* not twice the length of prothorax; shoulders strongly projecting: posterior declivity abrupt, its summit crowned by four rather large tubercles placed in a line; elsewhere (but especially on the third and fifth interstices) with a few small tubercles; with series of concealed punctures. Two basal segments of *abdomen* with dense, round punctures.

All the *femora* very acutely and distinctly dentate. Length,  $5\frac{2}{3}$  mm.; rostrum,  $1\frac{3}{4}$  mm.; width, 3 mm.

*Hab.*—Tasmania (type in Mr. A. Simson's collection).

The specimen described appears to be a female. The species resembles the preceding one, especially as regards the shoulders, but the clothing is very different, the prothorax is less transverse, the elytra are much shorter (in consequence of the posterior declivity being very abrupt), and the tubercles are differently disposed and less uniform in size; the femoral teeth are also considerably larger and more acute.

EXITHIUS CONSPICIENDUS, n. sp.

Densely clothed with dingy-brown scales; prothorax with a very distinct patch of large, soft, pale, rounded scales, commencing at the middle of the base, curved round and terminating in the median fascicle on each side of the middle. Prothorax with six fascicles, each elytral tubercle feebly fasciculate.

*Head* coarsely punctate but not at base; forehead very distinctly and moderately deeply trisinate. Rostrum shining; densely but not very coarsely punctate (except at base) in ♂, almost impunctate (except at base) in ♀. *Prothorax* moderately transverse, sides rounded, with dense concealed punctures. *Elytra* almost truncate at base; the alternate interstices with small tubercular elevations; with series of large (almost concealed) punctures. Two basal segments of *abdomen* with dense round punctures. *Femora* not very distinctly punctate. Length, 5 mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.

*Hab.*—Tasmania (Macleay Museum): Hobart (L. Rodway, H. H. D. Griffith, R. A. Black, and A. M. Lea); Mount Wellington (A. M. Lea).

The shape of the patch of pale scales on the prothorax is remarkable.

Two specimens differ in being smaller (4 mm.), in having the patch of scales on the prothorax snowy-white, and (very feebly) narrowly continued to apex, each side with a narrow pale stripe; the scutellum is white; each shoulder is white, the whole of the posterior declivity for the width of three interstices on each side with a triangular lateral extension near the summit is white, and the femora are very decidedly ringed. I cannot regard these specimens, however, as representing more than a variety.

EXITHIUS LOCULOSUS, n. sp.

Densely clothed with soft, sooty scales. Prothorax and elytra with the usual fascicles.



*Head* densely punctate; forehead not trisinuate. Rostrum wider at base than at apex; base coarsely punctate, elsewhere (except at sides) rather sparsely and finely punctate. Antennæ inserted nearer base than apex. *Prothorax* moderately transverse, subtriangular, owing to the sides decreasing in width from near base; with rather larger punctures than usual. *Elytra* not much wider than prothorax, just perceptibly widest about middle, thence arcuate to apex, which is truncate; base feebly trisinuate; each with about ten small tubercular elevations, most of which are beyond the middle; with series of large subquadrate punctures or foveæ, wider than the interstices and in places only slightly obscured. Two basal segments of *abdomen* with dense, round, deep punctures. *Femora* scarcely visibly dentate. Length,  $5\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.

*Hab.*—New South Wales: Galston (D. Dumbrell).

The build of this species is suggestive of *Microporopterus*, the femoral teeth are traceable with great difficulty and only from behind; the punctures of the abdomen are unusually deep and those of the elytra large.

#### EXITHIUS SCULPTILIS, n. sp.

♂. Sparsely clothed with dingy-brownish scales, with pale scales along the middle of the prothorax and rather denser there than elsewhere. Prothorax with six fascicles (the two median ones white); elytra scarcely fasciculate.

*Head* coarsely punctate between eyes; forehead shallowly but distinctly trisinuate. Rostrum slightly wider at apex than at base; with unusually large punctures, subseriatly arranged behind antennæ, in front of antennæ the punctures are larger than usual but much smaller than those behind them. Antennæ inserted one-third from apex of rostrum; scape shorter (but not by much) than funicle. *Prothorax* as long as wide, with large but not very numerous punctures or foveæ; with a moderately distinct, but short, median carina. *Elytra* strongly convex, subovate, widest just beyond middle, apex feebly rounded; with large punctures or foveæ, becoming small posteriorly but much larger (and also more distinct) on the sides; third and fifth interstices each with two feeble tubercular elevations: one at basal third and one at summit of posterior declivity. Two basal segments of *abdomen* with very large round punctures. *Femora* edentate; narrowly grooved. Length,  $4\frac{1}{4}$  mm.; rostrum, 1 mm.; width, 2 mm.

*Hab.*—New South Wales (Macleay Museum).

The clothing and punctures are very different to those

of the other species here described, the scape is unusually long, the body is strongly convex and comparatively narrow, and the femora are edentate; so that I may be wrong in referring it to *Exithius*—it is, at any rate, very closely allied to that genus.

*EXITHIUS INAMABILIS*, n. sp.

Moderately densely clothed with sooty and muddy-grey scales, irregularly distributed, and forming feeble fascicles on elytra, but not on prothorax.

*Head* densely punctate; forehead not trisinate. Rostrum subopaque in ♂, shining in ♀, rather thinner than usual; base and sides with coarse punctures, elsewhere not coarsely or densely punctate. Antennæ inserted almost in exact middle. *Prothorax* moderately transverse, sides strongly rounded; with dense, round, shallow, partially-concealed punctures. *Elytra* briefly subovate, widest just beyond middle, base feebly trisinate; all the interstices slightly convex and each feebly produced at base; with series of large punctures, becoming not much smaller posteriorly. *Meso-sternal receptacle* very feebly and not suddenly elevated; densely punctate. Abdomen with dense, round punctures. *Femora* stouter than usual; rather feebly dentate. Length, 4 mm.; rostrum,  $1\frac{1}{3}$  mm.; width, 2 mm.; variation in length,  $3\frac{1}{2}$ – $4\frac{1}{2}$  mm.

*Hab.*—New South Wales: Forest Reefs (A. M. Lea).

A short broad species, having the rostrum rather longer than usual and the prothorax without fascicles; on one specimen that has been entirely abraded each elytral puncture appears to be bounded by four minute granules, and which give the elytra a curious appearance, but these granules are usually not traceable.

*EXITHIUS BREVIS*, n. sp.

Black, antennæ and tarsi dull-red. Densely clothed with large, soft, sooty-brown scales, that on the prothorax and elytra form feeble fascicles.

*Head* densely and confusedly punctate; forehead not trisinate. Rostrum the length of prothorax; sides feebly incurved to middle; densely and coarsely punctate, punctures concealed except on apical fourth. Scape inserted in exact middle of rostrum; first joint of funicle stouter but scarcely longer than second. *Prothorax* moderately transverse, sides strongly rounded, apex about half the width of base; with dense, round punctures, becoming smaller anteriorly. *Elytra* about once and one-third the width and about twice the length of prothorax, slightly longer than wide; with series of

large, suboblong punctures, which are more or less concealed; interstices narrower than punctures, themselves lightly punctate. *Under-surface* with dense, round, regular punctures. *Mesosternal receptacle* not suddenly raised. *Femora* stout, very feebly dentate. Length,  $4\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.

*Hab.*—New South Wales: Forest Reefs (A. M. Lea).

A short, broad species, closely allied to the preceding one, from which it may be distinguished by its greater width, denser clothing, much more irregular punctures of head, and stouter and more coarsely punctured rostrum.

#### EXITHIOIDES, n. g.

*Head* large, feebly convex, partially concealed. Eyes ovate, widely separated, coarsely faceted. Rostrum comparatively short and wide, feebly curved; a shallow groove on each side above the scrobe. Scape inserted nearer apex than base of rostrum, the length of funicle; two basal joints of the latter elongate; club ovate, subcontinuous with funicle. *Prothorax* subquadrate, constriction slight; ocular lobes obtuse. *Scutellum* small. *Elytra* oblong-ovate. *Pectoral canal* deep and wide, terminated immediately behind anterior coxæ. *Mesosternal receptacle* raised, almost as long as wide, sides incurved to base, ridged along middle, emargination widely transverse; cavernous. *Metasternum* rather short; episterna not traceable. *Abdomen* moderately large, sutures straight; basal segment as long as the three following combined, intercoxal process rather narrow; third and fourth depressed below, and their combined length slightly less than that of second or fifth. *Legs* moderately long; posterior coxæ touching elytra; femora feebly grooved, edentate, posterior terminated before apex of abdomen; tibiæ lightly compressed, almost straight; tarsi rather thick, third joint very little wider than second and deeply bilobed, fourth rather long and thin. Oblong-elliptic, convex, squamose, non-tuberculate, winged.

Allied to *Exithius*, but the abdominal sutures straight and the body winged.

#### EXITHIOIDES PUNCTATUS, n. sp.

Black, opaque, antennæ and tarsi dull-red. Sparsely (the legs moderately densely) clothed with sooty-brown scales; base and posterior declivity of elytra with dense pale scales; under-surface with a few pale scales. *Prothorax* with four very feeble fascicles, elytra with several feeble fascicles and with four distinct (but still feeble) ones crowning the summit of posterior declivity.

*Head* feebly convex; densely punctate throughout; basal portion scaleless but opaque, separated from the scaly portion by a very feeble semicircular impression. Rostrum shorter than prothorax, sides incurved to middle; densely and rather coarsely punctate and opaque throughout, punctures larger and arranged in four feeble rows behind antennæ, with a very feeble median ridge on basal half. Scape inserted at apical third; first joint of funicle slightly longer than second, the others transverse. *Prothorax* moderately convex, almost as long as wide, sides moderately rounded, base truncate and not much wider than apex; with dense, large, round, deep punctures; with a short and very indistinct median carina. *Elytra* slightly wider than prothorax and about once and one-half its length; parallel-sided and cylindrical from near base to apical third; with dense, large (twice the size of those on prothorax), round, deep, closely approximate, but non-confluent punctures or foveæ, becoming smaller posteriorly; a few small feebly-shining granules on suture near base. Two basal segments of *abdomen* with large, round, deep punctures, larger on second than on first; fifth densely punctate. Length,  $4\frac{1}{2}$  mm.; rostrum,  $1\frac{1}{2}$  mm.; width, 2 mm.

*Hab.*—New South Wales: Glen Innes (A. M. Lea).

The punctures on both prothorax and elytra are perfectly regular, but on the latter they are so large and close together that the interspaces between them do not form regular interstices (except towards the sides), each being surrounded by a ring of more or less even thickness.

#### EUFAUSTIA, n. g.

*Head* rather large, strongly convex, not concealed. Eyes large, briefly ovate, widely separated, finely faceted. Rostrum wide, dilated at apex, curved throughout; scrobes shallow, continuous to but very feeble at lower edge of eyes, anterior portion visible from above. Antennæ moderately stout; scape inserted slightly before base of scrobe and slightly nearer apex than base of rostrum, shorter than funicle; two basal joints of funicle elongate; club ovate, rather large, much wider than funicle. *Prothorax* obcordate, apex and sides rounded, base feebly bisinuate; constriction scarcely traceable; ocular lobes very feeble. *Scutellum* small but convex and distinct. *Elytra* subtriangular, base truncate except for the shoulders. *Pectoral canal* wide, terminated between intermediate coxæ. *Mesosternal receptacle* transverse, walls thin and abruptly vertical throughout; open. *Metasternum* large, slightly longer than basal segment of abdomen; episterna rather narrow. *Abdomen* moderately

large, first segment just perceptibly longer than fifth but considerably longer than second, its suture with second moderately distinct at sides only; third and fourth with distinct and moderately deep sutures, their combined length slightly more than that of second and less than that of fifth. *Legs* (especially the anterior) long; coxæ large, the posterior touching elytra; femora stout, subclavate, not grooved, dentate, posterior passing elytra; tibiæ compressed, arched at base, feebly bisinuate beneath, in addition to the terminal hook with an obtuse subapical tooth; tarsi feebly clothed, basal joint considerably longer than second and third combined, third short, wide, and deeply bilobed, fourth long and thin; claws moderate. Elliptic, moderately convex, feebly clothed, winged.

This remarkable and extremely distinct genus is dedicated to the memory of the late Herr Johannes Faust, of Libau, Russia, the well-known specialist on *Curculionidæ*.

In a tabulation the genus should be placed near *Onidistus*, which, indeed, appears to be its nearest ally, although the shape of the rostrum, mesosternal receptacle, prothorax, and elytra are utterly different. The most noticeable features of the only known species are the long anterior legs, acutely dentate femora, long basal joint of tarsi, very wide (especially at apex) rostrum, with apex of scrobes visible and the peculiarly-distributed highly-polished granules.

#### EUFAUSTIA MIRABILIS, n. sp.

Black, subopaque; rostrum and legs brownish-red, antennæ (club excepted) paler. Sparsely clothed with thin white scales, sparser on disc of prothorax and elytra than elsewhere; in addition the sides are clothed with flat, indistinct scales; ciliation of ocular lobes unusually long.

*Head* densely punctate, flat between eyes; ocular fovea deep but smaller than many of the surrounding punctures. Rostrum shorter than prothorax, sides dilated to base and apex, at the middle allowing scrobes to be seen from above; densely but not coarsely punctate, each side of apex with a shallow impression. Mandibles large and strong but not projecting. Scape the length of five basal joints of funicle; of these the first is almost as long as second and third combined, the second almost as long as third and fourth combined, the third is longer than the fourth, the fifth and sixth are feebly, the seventh strongly transverse; club narrowly joined to funicle. *Prothorax* slightly longer than wide, middle of base with a shining scutellar lobe; with minute shining granules scattered about, except along middle;

densely punctate, the punctures rather small and towards the base and sides concealed. *Elytra* not more than twice the length of prothorax; shoulders produced and shining; near base and scutellum with about fourteen highly-polished granules or small tubercles of irregular size; with series of small and distinct punctures, behind nearly every one of which is a small shining granule, the first row is straight, the second slightly, and the third decidedly curved about the middle; interstices with very small punctures and with small, shining, irregularly and sparsely distributed granules. *Metasternum* slightly concave. *Abdomen* with the first segment feebly concave, raised above, and its suture with second concealed across the middle, except when viewed directly from behind, fifth, and the third and fourth at sides, rather densely punctate. Each of the four posterior *femora* with a small and acute tooth, of the anterior with a large and very acute tooth, all transversely rugulose; apical half of anterior tibiae obsoletely dentate or serrate beneath, basal half of intermediate with a very narrow compressed space above. Length, 7 mm.; rostrum,  $1\frac{3}{4}$  mm.; width,  $3\frac{1}{8}$  mm.

*Hub.*—New South Wales: Richmond River (A. M. Lea).

At a glance the surface appears to be almost glabrous. The shining granules and small tubercles at the base of the elytra are usually different on each elytron and are not alike in the three specimens under examination; the largest, however, is always on the third interstice. From certain directions the abdomen appears to be supplied with a feeble plate like in *Amydala* and its allies. The rostrum is not twice as long as its width at the apex.

#### ONIDISTUS SUBFORNICATUS, n. sp.

Dark blackish-brown, antennæ (club excepted) and tarsi pale-red. Densely clothed with minute muddy-grey scales which entirely conceal the derm; prothorax with stout, brown, curved, setose scales, each arising from a puncture; elytra with similar scales on the interstices, but which are often scarcely traceable when viewed from above.

*Head* very distinctly quadri-impressed; excavated between eyes. Rostrum comparatively stout; rather coarsely (for the genus) punctate at base and leaving a distinct shining carina behind the antennæ (punctures and carina less noticeable in ♀ than in ♂). Antennæ as in *araneus*, except that they are rather stouter. *Prothorax* with rather strong and rather dense, equally distributed punctures, which, however, are entirely concealed. *Elytra* striate-punctate, punctures very large (almost foveate) on basal third, becoming

smaller and compressed posteriorly, but still distinctly traceable through clothing, with, or without, small, shining, sutural granules. *Mesosternal receptacle* U-shaped, slightly cavernous. *Metasternum* slightly more than half the length of the following segment. *Wings* present. Length,  $6\frac{1}{2}$  mm.; rostrum,  $1\frac{2}{3}$  mm.; width, 3 mm.; variation in length,  $5\frac{1}{2}$ - $6\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

Appears to be an abundant species, judging by the number of specimens in the Macleay Museum. It is abundantly distinct from *nodipennis* and *araneus* by the shape of the mesosternal receptacle and the strong (although concealed) prothoracic punctures; in shape it is intermediate. The clothing is much denser, and of a slightly different shade of colour to that of *araneus*.

This species agrees fairly well with Mr. Pascoe's description of *odiosus*, except that the elytra are not callose towards the base, and that the punctures are not distinct, being in fact closer together than usual. But if the locality given for *odiosus* (King George Sound) is correct (a subject, however, that appears to me to be doubtful judging by the distribution of *Onidistus* and its allies) there should be no liability to confound the two species.

#### PSEUDONIDISTUS, n. g.

*Head* partially concealed, forehead trisinate. Eyes large, ovate, moderately faceted. Rostrum moderately long and rather thin, each side with a shallow groove above the scrobe. Antennæ thin; scape inserted nearer apex than base of rostrum, longer than funicle; two basal joints of funicle elongate; club ovate, moderately large. *Prothorax* transverse, base bisinuate, sides rounded, apex feebly produced, constriction slight, ocular lobes obtuse. *Scutellum* not traceable. *Elytra* cordate. *Pectoral canal* rather shallow and not very wide, wider between coxæ than in front, terminated between intermediate coxæ. *Mesosternal receptacle* transverse, sides produced, hinder margin semicircular; open. *Metasternum* much shorter than the following segment; episterna narrow but distinct throughout. *Abdomen* moderately large, sutures distinct, first segment as long as the two following combined, intercoxal process wide; third and fourth combined slightly longer than second and considerably longer than fifth. *Legs* long; posterior coxæ touching elytra; femora stout, subpedunculate, acutely dentate, not grooved, posterior passing elytra; tibiæ somewhat compressed, thin, bisinuate beneath;

tarsi long and very thin, third joint longer than wide and not much wider than second, bilobed to basal fourth. Convex, squamose, fasciculate, apterous.

Closely allied to *Onidistus*, from which it differs in the forehead being tri- instead of quadri-sinuate, the scutellum absent, and the shape of the mesosternal receptacle; the outline of the latter is much the same as that of the copper-plates that decorate the breasts of many aboriginal kings.

*PSEUDONIDISTUS CORDATUS*, n. sp.

Black, antennæ, tarsi, and tibial hooks of a rather pale-red. Densely clothed with muddy-brown scales, which are more or less thickly interspersed with stout, suberect, paler (sometimes darker) scales; prothorax with four dark fascicles across middle; clothing of under-surface and legs much the same, but the stout scales more elongate. Head between eyes and basal half of rostrum densely clothed.

*Head* bald, shining and impunctate except between eyes, forehead trisinate, the median excavation deeper and more distinct, but not as wide as the lateral ones; these narrowly margin the eyes. Rostrum slightly longer than prothorax, moderately curved, feebly decreasing in width from base to middle; basal half evidently coarsely punctate, but punctures concealed; with a distinct, shining, median carina; apical half polished and impunctate. Antennæ inserted two-fifths from apex of rostrum; two basal joints of funicle subequal in length, third to sixth subglobular, seventh transverse. *Prothorax* moderately transverse, convex; with rather dense and large, round punctures; base feebly bisinuate. *Elytra* cordate, considerably wider than and about twice the length of prothorax; shoulders, sides, and apex rounded; with series of large, round, deep, somewhat irregular punctures, very large on basal half of disc, and becoming smaller on the sides and posteriorly; alternate interstices irregularly thickened and feebly raised; four or five granules on each side of suture towards the base. *Metasternum* with an irregular series of rather large punctures on each side, a subcariniform process behind each side of the receptacle. Basal segment of abdomen with a semicircular row of large punctures (the inner one on each side decidedly foveate) margining the coxæ; second depressed below first, its basal half (except at sides) with moderately large, irregular punctures, apical segment with dense and rather large punctures. *Femora* with large curvilinearly triangular teeth, those of the anterior largest. Length, 5 mm. (vix.); rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{2}$  mm.



*Hab.*—Queensland: Cairns (Macleay Museum), Mulgrave River (Henry Hacker).

The punctures (except on sides of elytra), foveæ, and granules are entirely concealed by the clothing. On abrasion the derm of the prothorax is seen to be opaque, whilst that of the elytra is shining; the punctures of the latter, though smaller posteriorly than elsewhere, are still of considerable size there, fully as large as those of the prothorax.

#### PALETONIDISTUS, n. g.

*Head* moderately large; forehead trisinate; ocular fovea deep. *Eyes* moderately large, subovate, rather finely faceted. *Rostrum* moderately long and rather thin, curved, with a shallow groove on each side above the scrobe. *Scape* not the length of funicle, inserted nearer apex than base of rostrum; two basal joints of funicle elongate; club briefly ovate. *Prothorax* moderately convex, walls almost vertical, base bisinuate, sides and apex moderately rounded. *Scutellum* absent. *Elytra* subovate, much wider than prothorax. *Pectoral canal* deep and rather narrow, terminated between four anterior coxæ. *Mesosternal receptacle* raised, longer than wide, ridged along middle, emargination semicircular; cavernous. *Metasternum* very short; episterna narrow but traceable throughout. *Abdomen* rather large; two basal segments large, suture between them rather feeble but traceable throughout; first as long as second and third combined, intercoxal process wide, third and fourth combined the length of fifth and slightly shorter than second. *Legs* rather long; posterior coxæ not touching elytra; femora subclavate, acutely dentate, not grooved, posterior not extending to apex of body; tibiæ thin and compressed, bisinuate beneath, tarsi long, thin, and polished above, third joint not much wider than second but deeply bilobed, claws thin. Elliptic-ovate, convex, squamose, tuberculate, apterous.

Allied to *Paleticus* and *Onidistus*, from both of which it may be distinguished by the shape of the mesosternal receptacle.

#### PALETONIDISTUS TRISINUATUS, n. sp.

Black, opaque; antennæ and tarsi red and shining. Densely clothed with muddy scales, interspersed with longer and stouter but almost unicolourous scales, becoming subfasciculate on tubercles; under-surface sparsely clothed. Head and basal half of rostrum with large and moderately-dense scales.

*Head* moderately convex, basal portion visibly punctate; forehead distinctly but not deeply trisinate; ocular fovea

rather deep and narrow. Rostrum almost the length of prothorax; basal half coarsely punctate and along middle feebly carinate; apical half shining and finely punctate. Scape noticeably shorter than funicle; of the latter the first joint is slightly longer and thicker than the second, the second to sixth are almost cylindrical, and the seventh is as long as wide. *Prothorax* as long as wide, apex not suddenly narrowed, sides rather feebly rounded, depressed along middle, the depression more distinct on apical third than elsewhere; with dense, round, and deep but not very large punctures, and which are more or less concealed. *Elytra* about twice and one-half the length of prothorax and at base considerably wider, widest just beyond middle; each side strongly lessened on apical third, each feebly separately rounded at apex; shoulders produced; each with about nine, small, rounded tubercles; three sub-basal and six about summit of posterior declivity; a small shining elevation on each side of the scutellar region; with series of large, round, deep, more or less distant punctures, which become small posteriorly, and are more or less concealed. *Under-surface* almost without punctures, except for a row of rather large ones across metasternum and a similar row on basal segment of abdomen. *Legs* rather long; femora each with a large, triangular, acute tooth (equal in all), posterior extending almost to apex of abdomen. Length, 7 mm.; rostrum,  $1\frac{2}{3}$  mm. (vix.); width,  $3\frac{1}{2}$  mm.

*Hab.*—New South Wales (A. M. Lea).

There appears to be a feeble impunctate space along the middle of the prothorax. The clothing on the specimen described appears to be partially abraded, but the species is so distinct that I have not hesitated to describe it.

#### ECILDAUS, n. g.

*Head* moderately large, partially concealed; forehead trisinuate. Eyes small, ovate, widely separated, coarsely faceted. Rostrum rather short and thick, strongly bent at base; scrobes wide, shallow, and highly polished; a shallow groove on each side above them. Antennæ stout; scape inserted nearer base than apex of rostrum and shorter than funicle; two basal joints of the latter subelongate, the others transverse; club ovate. *Prothorax* moderately or not at all transverse, sides rounded, base almost truncate, disc flattened, constriction shallow, ocular lobes obtuse. *Scutellum* absent. *Elytra* subovate, base lightly trisinuate and suddenly (but not by much) wider than prothorax. *Pectoral canal* deep and wide, terminated between hinder part of anterior coxæ. *Meso-sternal receptacle* raised, longer than wide, emargination widely

transverse; cavernous. *Metasternum* less than half the length of the following segment; episterna rather narrow. *Abdomen* with straight sutures; two basal segments rather large; first as long as second and third combined, intercoxal process moderately wide; third and fourth combined slightly longer than second or fifth. *Legs* short; posterior coxæ touching elytra; femora stout, outwardly curved on apical half, grooved, edentate, posterior terminated before apex of abdomen; tibiæ short, curved at base only; tarsi rather short, moderately wide or rather narrow, feebly or not at all clothed above and shining, third joint very little wider than, or about once and one-half the width of second, fourth thin and rather long. Elliptic-ovate, moderately convex, squamose, non-tuberculate, apterous.

One of the few genera in which the tarsi are variable, in *glabricornis* they are almost as in *Methidrys*, whilst in the others they are feebly (but very decidedly) clothed above, with the third joint distinctly wider than the second. The forehead is trisinate, the median sinus being very wide; the lateral ones rather deeply margin the eyes; the polished base of the head looks as if an iron cap had been drawn over that portion of it, this is especially noticeable in *personatus*. Although four specimens are under examination, the metasternal episterna cannot be distinctly seen in any (on account of the clothing), they appear, however, to be rather narrow. The three species described below are closely allied in general appearance.

Tarsi glabrous on upper surface, head	
feebly carinate	... .. glabricornis
Tarsi not entirely glabrous, head not	
carinate.	
Emargination of forehead encroached	
upon by punctures	... .. melancholicus
Emargination of forehead not en-	
croached upon	... .. personatus

#### ECILDAUS PERSONATUS, n. sp.

Black, antennæ and tarsi red. Densely clothed with large, soft, sooty-brown scales, obscurely spotted with scales of a lighter shade of brown, more noticeable on shoulders than elsewhere; tarsi distinctly clothed.

*Head* convex, shining, and lightly punctate, except on anterior two-fifths; forehead trisinate, the median sinus much wider than the lateral ones. Rostrum shorter than prothorax, base wider than apex, sides incurved to middle; basal half with coarse, concealed punctures, apical half shining, but rather strongly punctate. Second joint of funicle just perceptibly longer than first. *Prothorax* feebly transverse; with

dense, round, partially-concealed punctures. *Elytra* about once and one-half the length of prothorax; striate-punctate, punctures rather large but concealed; interstices regular and wider than striæ. Punctures of *under-surface* concealed; basal segments of abdomen slightly concave in middle. *Femora* widely grooved, posterior not extending to apical segment. Length, 4 mm.; rostrum, 1 mm.; width, 2 mm.

*Hab.*—Queensland: Cape Upstart (A. Simson).

Two specimens under examination, each of which appears to be ♂.

*ECILDAUS MELANCHOLICUS*, n. sp.

Black, antennæ and tarsi dull-red. Densely clothed with moderately large, soft, sooty-brown scales, very obscurely speckled with lighter brown ones; tarsi distinctly clothed.

*Head* shining and lightly punctate on basal third; elsewhere coarsely punctate; forehead trisinate, but the sinuations slightly interrupted by punctures. Rostrum shorter than prothorax, base wider than apex, sides incurved to middle; coarsely punctate throughout (except for a median space between antennæ) but punctures concealed on basal half, apical half shining. First joint of funicle slightly longer than second. *Prothorax* moderately transverse; with dense (but not confluent), round, shallow, clearly-cut punctures; with a short and very feeble median carina. *Elytra* as in the preceding species. *Under-surface* (except that the abdomen is flat) and *legs* as in the preceding species. Length, 4½ mm.; rostrum, 1 mm. (vix.); width, 2 mm.

*Hab.*—New South Wales: Forest Reefs (A. M. Lea).

*ECILDAUS GLABRICORNIS*, n. sp.

Black, antennæ and tarsi red and shining. Clothing much as in the preceding species, except that the tarsi are glabrous above.

*Head* glabrous but rather coarsely punctate on basal third, punctures elsewhere concealed; forehead trisinate, the sinuations slightly encroached upon by punctures; with a very feeble median carina. Rostrum slightly shorter than prothorax, base considerably wider than apex, sides incurved to middle; coarsely punctured throughout, punctures on basal third concealed, but leaving a feeble median carina visible; elsewhere shining. First joint of funicle longer than second. *Prothorax* as long as wide, with dense (but not confluent), round, shallow, clearly-cut punctures; with a narrow, waved, median carina, traceable from near base to near apex. *Elytra* as in the two preceding species. *Abdomen* with dense, round, concealed punctures; basal segments feebly concave in

middle. *Femora* densely punctate; posterior extending to apical segment. Length,  $4\frac{3}{4}$  mm.; rostrum, 1 mm. (vix.); width, 2 mm. (vix.).

*Hab.*—New South Wales: Forest Reefs (A. M. Lea).

In appearance close to the preceding species, but at once distinguished by the prothorax being as long as wide, and by the tarsi. The antennæ, except the apical joints of the club, are glabrous and polished. The median prothoracic carina is sufficiently distinct; in the preceding species it is much shorter and traceable with difficulty. Where the elytral clothing has been removed the interstices are seen to be narrow and waved, although they are evidently regular throughout.

#### NOTOCALVICEPS, n. g.

*Head* of moderate size, not concealed; forehead strongly quadrisinuate; bald and highly polished except between eyes. Eyes large, ovate, rather widely separated, finely faceted. Rostrum long, thin, and curved, each side with a rather deep groove above the scrobe. Antennæ rather thin; scape inserted nearer apex than base of rostrum, the length of funicle; two basal joints of funicle elongate; club elongate-ovate, its joints oblique. *Prothorax* transverse, sides rounded, base bisinuate, constriction feeble but continued across summit; ocular lobes obtusely rounded. *Scutellum* transversely oblong, distinct. *Elytra* much wider than prothorax, base lightly trisinuate. *Pectoral canal* deep and narrow, terminated between intermediate coxæ. *Mesosternal receptacle* feebly raised, U-shaped, walls equal throughout; cavernous. *Metasternum* slightly but noticeably shorter than the following segment; episterna distinct throughout. *Abdomen* moderately large, sutures deep; first segment not as long as second and third combined, its suture with second curved, intercoxal process rather narrow; third and fourth rather large, their combined length considerably more than that of second or fifth. *Legs* long and rather thin; posterior coxæ not touching elytra; femora dentate, not grooved, posterior passing elytra or not; tibiæ feebly compressed, almost straight; tarsi thin, first and fourth joints equal in length, third moderately wide and deeply bilobed; claws long and very thin. Subovate, convex, squamose, punctate, nontuberculate, apterous.

Allied, but not very closely so, to *Methidrysis*; indeed, but for the sinuation of the forehead, I should have imagined it as being widely removed from *Paleticus*. There are a number of species, belonging to allied genera, in which the hinder part of the head is more or less shining, but in the two species

described below the base of the head is highly polished and entirely bald.

Posterior femora passing elytra; prothoracic punctures more or less confluent : punctipennis, *n. sp.*  
 Posterior femora not extending to apex of abdomen; prothoracic punctures not confluent ... .. rarus, *n. sp.*

NOTOCALVICEPS PUNCTIPENNIS, *n. sp.*

Black, subopaque; antennæ, tarsi, and tibial hooks dull-red. Not very densely clothed with stout reddish-brown scales; on the prothorax one in each puncture, on the elytra forming feeble decumbent clusters on the interstices, suture with minute scales, each puncture with a small scale, a distinct patch of pale scales on each side at apex; abdomen with sparse elongate scales; legs rather densely clothed. Head between eyes (elsewhere perfectly bald) and basal half of rostrum sparsely squamose.

*Head* highly polished (except between eyes) and finely but distinctly punctate; forehead strongly quadrisinuate, the median excavations deeper and narrower than the lateral ones, and separated by a distinct ridge, the lateral excavations margining the eyes; between eyes rather coarsely punctate; the ocular fovea rather deep and large. Rostrum long and thin, feebly decreasing in width from base to apex; basal third subopaque, subseriately punctate and with a very distinct, narrow, shining, median carina; apical two-thirds polished and finely punctate. Scape inserted at about two-fifths from apex of rostrum; two basal joints of funicle subequal, none of the others transverse. *Prothorax* moderately transverse, sides rather strongly rounded, base moderately bisinuate; coarsely foveate-punctate, punctures more or less confluent, the interspaces subtuberculate; along middle of apical half a feeble waved carina. *Elytra* subcordate, about once and one-fourth the width, and not thrice the length of prothorax; seriate-punctate or foveate, punctures large, deep, distant, triangular or conical, and largest along suture and base, becoming smaller at sides and much smaller posteriorly. *Metasternum* and basal segment of abdomen each with a curved row of large punctures. *Legs* densely punctate; femora acutely dentate, posterior passing elytra. Length, 9 mm.; rostrum,  $2\frac{3}{4}$  mm.; width,  $4\frac{1}{4}$  mm.

*Hab.*—Queensland: Mossman River (type in Macleay Museum).

The scales on the unique specimen under examination are condensed into small clusters on the elytra, and some of these clusters are paler than the others. The elytral punctures are

very peculiar, they are shining, those of the first row are almost triangular (the basal and deepest end directed towards the base of the elytra), those of the second row are more conical, whilst towards the sides they become ovate, the spaces between the punctures and between the rows are on the same general level.

NOTOCALVICEPS RARUS, n. sp.

Black, subopaque; antennæ, tarsi, and tibial hooks dull-red. Not very densely clothed with moderately stout, sub-erect, brownish scales, on the prothorax confined to the punctures, on the elytra on the interstices as well; elytra in addition with a distinct oblique patch of whitish scales on each side, at about basal third and extending from the third to the seventh interstices; under-surface and tibiæ with long, thin scales; femora rather densely clothed. Head between eyes (elsewhere perfectly bald) and base of rostrum with a few elongate scales.

*Head* highly polished (except between eyes) and very finely punctate; forehead strongly quadrisinuate; coarsely punctate between eyes, the ocular fovea not traceable. Rostrum and antennæ as in the preceding species, except that the median carina of the rostrum is continued on the head almost to its middle. *Prothorax* moderately transverse, sides rather strongly rounded, base moderately trisinuate; with large, round, clearly-defined punctures, somewhat variable in size but nowhere confluent; with a feeble median carina, not traceable to base or apex. *Elytra* oblong-cordate, about once and one-third the width and almost thrice the length of prothorax, shoulders rounded, each feebly separately rounded at apex; seriate-punctate or foveate, punctures large, deep, distant, subconical, becoming smaller and more rounded towards sides, and very small posteriorly. *Metasternum* and basal segment of abdomen each with a curved impression containing large punctures. *Legs* densely punctate; femora rather feebly dentate, posterior scarcely extending to apex of abdomen. Length, 8 mm.; rostrum,  $2\frac{1}{2}$  mm.; width, 4 mm.

*Hab.*—New South Wales (J. Faust).

The white oblique patches of scales on the elytra are very distinct, the general scales are rather longer and thinner than in the preceding. The median sinuations of the forehead are fully as wide and just about as deep as the lateral ones; they are slightly interrupted by punctures. The elytral punctures, though similar in character, are rather more elongate than in the preceding species, whilst those of the prothorax are not at all confluent; the femoral teeth are considerably smaller; the elytra are wider at the base and more decidedly arcuate posteriorly.

## TERPOROPUS, n. g.

*Head* partially concealed, forehead lightly sinuous. Eyes rather large, ovate, rather coarsely faceted. Rostrum rather long and thin, moderately curved, with a shallow groove on each side above scrobe. Antennæ thin; scape inserted at about middle of rostrum, shorter than funicle: all the joints of the latter elongate; club ovate, twice the width of funicle. *Prothorax* subquadrate, constriction slight; ocular lobes obtuse. *Scutellum* absent. *Elytra* rather long and deep, almost parallel-sided. *Pectoral canal* deep and narrow, terminated immediately behind anterior coxæ. *Mesosternal receptacle* raised, longer than wide; sides incurved to base, emargination widely transverse; cavernous. *Metasternum* about half the length of the following segment; episterna narrow and depressed. *Abdomen* rather small, narrow, and nowhere suddenly lessened, sutures deep, straight, and distinct; first segment moderately large, as long as the three following combined, intercoxal process narrow; second very little longer than third; third and fourth combined slightly longer than fifth. *Legs* long and thin; posterior coxæ touching elytra; femora not grooved, acutely dentate, posterior passing elytra; tibiæ thin and lightly compressed, diminishing from base to apex; tarsi long, thin, shining, and very sparsely clothed above, third joint not much wider than second, deeply bilobed, but not to base, fourth long and thin. Elongate-elliptic, strongly convex, squamose, tuberculate, apterous.

The nearest ally of this genus appears to be *Stenoporopterus*, from which it can be readily distinguished by the legs, antennæ, and frontal excavations.

## TERPOROPUS TENUICORNIS, n. sp.

Black, antennæ pale-red, the tarsi darker. Moderately densely clothed with muddy-brown scales, interspersed with longer and suberect scales, that on the prothorax and elytra form feeble fascicles.

*Head* feebly convex; basal half rather coarsely punctate, subopaque, and scaleless; forehead lightly quadrisinuate; anterior half with moderately-dense concealed punctures; a very feeble elevation on each side of middle. Rostrum slightly longer than prothorax, sides feebly incurved to middle; basal third with strong punctures in feeble rows, separated by feeble ridges, elsewhere polished with moderately small and rather dense punctures. Scape the length of five following joints; first joint of funicle slightly shorter than second and slightly longer than third, third slightly longer than fourth, the others



feebly decreasing in length but none transverse. *Prothorax* as long as wide, sides moderately rounded, base truncate and not much wider than apex; with large but not very dense punctures, and which are more or less concealed except on flanks, feebly depressed along middle; towards each side with several very obtuse elevations. *Elytra* scarcely twice the length of prothorax and very little wider, as deep as wide, sides very feebly rounded except towards apex; seriate-punctate (or foveate), punctures very large and deep, becoming smaller posteriorly, much obscured by clothing (less so on sides); third and fifth interstices each with three obtuse tubercles, the largest on third at summit of posterior declivity. *Under-surface* with large, concealed punctures. *Femora* with distinct but rather thin, triangular, acute teeth, subequal on all; posterior passing elytra for about one-third their length; posterior tibiae gently arched throughout, the others at base only. Length, 6 mm.; rostrum, 2 mm.; width,  $2\frac{3}{4}$  mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

A narrow species, with more or less concealed but very coarse punctures. The flanks of the elytra commence from the fifth interstice. The funicle is unusually thin.

#### AUSTRECTOPSIS, n. g.

*Head* moderately large and partially concealed, forehead sinuous. Eyes moderately large, ovate, widely separated, moderately faceted. Rostrum moderately long and curved, with a shallow groove on each side above scrobe. Antennae moderately thin; scape inserted nearer apex than base of rostrum, the length of funicle; two basal joints of funicle elongate; club elongate-ovate, its outline continuous with that of funicle, the joints oblique. *Prothorax* transversely sub-oblong, base bisinuate, ocular lobes slightly obtuse. *Scutellum* distinct. *Elytra* suboblong, base trisinuate, shoulders rounded. *Pectoral canal* deep and rather wide, terminated between intermediate coxae. *Mesosternal receptacle* not raised, base slightly wider than sides, emargination briefly U-shaped; cavernous. *Metasternum* rather long, but shorter than the following segment; episterna rather wide. *Abdomen* with distinct sutures; two basal segments rather large, first the length of second and third combined, its apex incurved, intercoxal process rather narrow and rounded; third and fourth rather large, their combined length rather more than that of second, second longer than fifth. *Legs* rather long; posterior coxae not touching elytra; femora moderately stout, not grooved, dentate, posterior passing elytra; tibiae compressed, rather strongly arched at base; tarsi rather long, thin, and feebly clothed, third joint

moderately wide and deeply bilobed, fourth the length of first. Subelliptic, convex, squamose, nontuberculate.

The affinities of this genus are not very obvious. It is placed in the *Poropterus* group on account of the sinuated forehead, narrow tarsi, sutural granules and rostrum approaching those of *Paleticus* and many allied genera, but some of its characters appear to denote affinity with the *Chaetectorus* group, whilst the long club is not in harmony with either.

Since this description was written I have examined a specimen of the New Zealand genus *Ectopsis* (for a specimen—*E. ferrugalis*—of which I am indebted to Major Broun). At a glance the two species—*ferrugalis* and *oblongus*—appear to be congeneric, but comparing them in detail *Ectopsis* is seen to differ in having smaller eyes, club not at all ovate, mesosternal receptacle raised, the canal terminated before the middle coxæ, the base narrower than the sides, but in particular by the femora being very distinctly grooved and the posterior terminated considerably before apex of abdomen.

#### AUSTRECTOPSIS OBLONGUS, n. sp.

Of a very dark-brown, rostrum (except at apex) black, antennæ and tarsi pale-red. Very densely clothed (apical two-thirds of rostrum nude) with fawn-coloured scales, paler before, and darker on, posterior declivity; apical segments of abdomen with darker scales except at sides; a distinct stripe of dark scales on flanks of meso- and meta-sternum and continued on flanks of prothorax almost to apex. Prothorax with stout, suberect scales, thickly but evenly scattered about and not forming fascicles; elytra with similar scales but condensed into feeble fascicles on the suture and alternate interstices, each elytral puncture with a scale that is white except posteriorly; elsewhere with stout scales, rather thickly distributed.

*Head* feebly compressed, forehead 5-sinuate. Rostrum longer than prothorax, sides almost parallel; basal third with coarse concealed punctures; elsewhere polished and lightly punctate. Scape inserted two-fifths from apex; first joint of funicle slightly shorter than second, fourth to sixth slightly the seventh strongly transverse; club the length of six preceding joints combined. *Prothorax* rather flat, strongly transverse, basal three-fourths almost perfectly parallel-sided, base lightly bisinuate, but the scutellar lobe distinct, posterior angles rectangular; surface feebly and irregularly elevated; punctures entirely concealed. *Elytra* fully thrice the length of prothorax and at base once and

one-third the width, parallel-sided to near apex; with series of rather large, round, distant punctures: interstices wider than punctures, the third with three, the fifth with four feeble elongate tubercles; suture thickened from before to about middle of posterior declivity; each side of suture towards base with small, shining granules. Punctures of *under-surface* entirely concealed. *Femora* with triangular teeth, those of the posterior large, of the four anterior considerably smaller, but still large. Length,  $6\frac{1}{2}$  mm.; rostrum, 2 mm.; width, 3 mm.

*Hab.*—Queensland: Cairns (Macleay Museum), Kuranda (G. E. Bryant).

The forehead is very distinctly sinuate, but each emargination is slight. From some directions the third and fourth abdominal segments are seen to be drawn slightly backwards at the sides.

ROPTOPERUS TERRÆ-REGINÆ, n. sp.

♂. Dark-brown, antennæ and tarsi of a rather pale-red. Very densely clothed with loose fawn-coloured scales, forming ten fascicles on prothorax and about twenty on elytra. Head and base of rostrum and the legs very densely clothed, the latter in addition with elongate scales.

*Head* moderately convex, depressed towards base; punctures concealed. Rostrum shorter than prothorax, noticeably wider at base than at apex; punctures of basal two-thirds coarse and concealed, apical third shining but rather strongly punctate. First joint of funicle stouter and slightly longer than second, the others feebly transverse. *Prothorax* distinctly transverse, punctures nowhere traceable. *Elytra* more than twice the length of prothorax; apparently rather strongly tuberculate beneath fascicles; punctures everywhere concealed. Two basal segments of *abdomen* with rather large and not entirely concealed punctures. Posterior *femora* extending to apical segment of abdomen. Length, 4 mm.; rostrum, 1 mm.; width, 2 mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

The clothing is much the same as in *tasmaniensis*, except that it is considerably denser (except on the two basal segments of abdomen, where it is sparser) and that the legs (at least in the unique specimen under examination) are not at all ringed. It may be at once distinguished, however, by the decidedly transverse prothorax. The base of the head is as in the following species, but the clothing, especially of the rostrum, is very different.

## ROPTOPERUS OCCIDENTALIS, n. sp.

Almost black, antennæ and tarsi of a rather pale-red. Moderately-densely clothed with scales, varying on different individuals, from a muddy-brown to black, and forming ten fascicles on prothorax and about twenty on elytra. Head, base of rostrum, and legs densely squamose, the latter in addition with obscure whitish rings and long setæ.

*Head* moderately convex; base depressed and with a shining impunctate ring; punctures elsewhere concealed. Rostrum shorter than prothorax, shorter and wider in ♂ than in ♀; in ♂ coarsely punctate (the punctures concealed on basal half), shining and moderately coarsely punctate on apical half; in ♀ coarsely punctate on basal third, lightly punctate and shining elsewhere. Scape in ♂ inserted just before middle of rostrum, in ♀ at basal third; first joint of funicle the length of second and third combined, third to seventh transverse. *Prothorax* as long as wide, subobcordate, feebly impressed along the middle; with dense, round, concealed punctures; subtuberculate beneath fascicles. *Elytra* about twice the length and once and one-third the width of prothorax; striate-punctate, punctures oblong; striæ rather deep and narrow, interstices wider than striæ, and subtuberculate beneath fascicles; suture with a few small shining granules towards base. *Under-surface* and *legs* as in *tasmaniensis*. Length,  $4\frac{1}{2}$  mm.; rostrum,  $\frac{4}{5}$  mm.; width, 2 mm.; variation in length  $3\frac{3}{4}$ - $4\frac{1}{4}$  mm.

*Hab.*—Western Australia: Swan River, Rottnest Island (A. M. Lea).

In both sexes the rostrum is almost parallel-sided in front of the antennæ, and increases in width behind them. The granules of the elytral suture are usually concealed. The clothing is more like that of *tasmaniensis* than of the preceding species, but is sparser and apparently very easily abraded; some of the elytral fascicles are crowned with dingy-whitish scales. All the specimens under examination (two of which were taken *in cop.*) were obtained under loose blocks of limestone.

## CAIRNSICIS, n. g.

*Head* moderately large, not concealed. Eyes ovate, widely separated, coarsely faceted. Rostrum moderately long and curved, comparatively wide. Antennæ moderately thin; scape inserted nearer apex than base of rostrum and the length of funicle; two basal joints of the latter elongate; club ovate, wider than funicle. *Prothorax* transverse, base bisinuate, constriction feeble, ocular lobes obtuse. *Scutellum* absent. *Elytra* elongate-subovate, not much (and not suddenly) wider than prothorax. *Pectoral canal* deep and wide, terminated be-

tween four anterior coxæ. *Mesosternal receptacle* raised, sides incurved to base, emargination semicircular; cavernous. *Metasternum* much shorter than the following segment; episterna very narrow. *Abdomen* moderately large, sutures (except between first and second segments in middle) deep and distinct; first as long as second and third combined; third and fourth combined slightly longer than second or fifth. *Legs* moderately long; femora comparatively thin, feebly grooved, edentate, posterior terminating before apex of abdomen; tibiæ compressed and feebly bisinuate beneath, in addition to the terminal hook with a very feeble subapical tooth; tarsi moderately thin, not shining, third joint moderately wide and deeply bilobed, fourth elongate. Elliptic, convex, squamose, fasciculate, apterous.

Very close to *Roptoperus*, but the scape inserted nearer apex than base of rostrum and the length of funicle, the abdomen convex, the femora thinner and grooved, the tarsi (though rather thin) not shining, and with the third joint rather wide and deeply bilobed.

CAIRNSICIS OPALESCENS, n. sp.

Black, antennæ and claw joints of a rather pale-red. Very densely clothed (except on under-surface) with fawn-coloured scales, denser on prothorax than on elytra; on the former they are large, circular, and condensed into numerous small fascicles, on the latter they are smaller and less rounded and the scales of the (rather numerous) fascicles are shining. Head (except at base) and base of rostrum moderately-densely clothed.

*Head* feebly convex; base impunctate and shining; near base a circular line formed by dense, small, and confluent punctures, before this line shining, elsewhere with coarse, concealed punctures. Rostrum the length of prothorax, almost parallel-sided throughout; basal third with coarse, concealed punctures, elsewhere polished and lightly punctate. Scape inserted at apical third; two basal joints of funicle equal in length, the others transverse. *Prothorax* slightly transverse; punctures concealed; subtuberculate beneath fascicles, with a very feeble shining median carina. *Elytra* slightly wider than prothorax and about once and one-half as long; shoulders emarginate to receive posterior angles of prothorax; with series of large, round, partially-concealed punctures; subtuberculate beneath fascicles; a small, shining, conical granule on each side of scutellar region. *Under-surface*, except third and fourth abdominal segments, with moderately large and dense but partially-concealed punctures. Posterior *femora* extending almost to

apex of abdomen. Length, 5 mm.; rostrum,  $1\frac{1}{2}$  mm.; width,  $2\frac{1}{3}$  mm.

*Hab.*—Queensland: Cairns (Macleay Museum).

The prothoracic scales, and a few along suture of elytra, of the unique specimen under observation, have a greenish-opalescent gloss; but unless closely examined this gloss is not seen, although here and there a scale may show up green; on the sides and apex of the elytra some of the scales have a rosy gloss, but it is rather indistinct.

#### ZENOPOROPTERUS, n. g.

*Head* rather large, not concealed. Eyes small, ovate, widely separated, coarsely faceted. Rostrum not very long, wide and feebly curved. Antennæ moderately stout; scape inserted closer to base than apex and shorter than funicle; two basal joints of the latter elongate; club elliptic-ovate and rather large. *Prothorax* subquadrate, base bisinuate, constriction feeble, ocular lobes very obtuse. *Scutellum* absent. *Elytra* subovate, at base very little wider than prothorax, widest at about middle. *Pectoral canal* deep and wide, terminated between four anterior coxæ. *Mesosternal receptacle* flat between coxæ, but raised in front, emargination semicircular; cavernous. *Metasternum* much shorter than the following segment; episterna rather narrow. *Abdomen* large, sutures straight and distinct, first segment as long as second and third combined, intercoxal process wide; third and fourth combined slightly longer than second or fifth, fifth slightly longer than second. *Legs* moderately long; posterior coxæ almost touching elytra; femora stout, edentate, very feebly grooved, posterior terminated before apex of abdomen; tibiæ feebly compressed, bisinuate beneath, in addition to terminal hook with a small subapical tooth; tarsi thin and somewhat shining, third joint moderately wide, fourth long and thin. Elliptic ovate, moderately convex, squamose, tuberculate, apterous.

Very close to *Roptoperus*, but the third and fourth abdominal segments with very narrow (though distinct) sutures.

This does not appear to be a very satisfactory character to separate two genera, but in the species described below the flanks of the elytra are inwardly oblique and highly polished, a character rendering it exceedingly distinct. The head is depressed at the base, and at the extreme base is shining.

#### ZENOPOROPTERUS MIRUS, n. sp.

Black, rostrum and legs brownish-red, antennæ pale-red. Moderately-densely clothed with muddy-brown or ocherous-

red scales, on prothorax and elytra condensed into feeble fascicles; legs with elongate scales.

*Head* depressed and shining at base; in middle convex and with dense concealed punctures. Rostrum shorter than prothorax, sides very feebly incurved to middle, wider at base than at apex; wider and shorter in ♂ than in ♀; basal third with coarse concealed punctures, which, however, leave a short distinct median carina (very indistinct in ♀); elsewhere polished and lightly punctate. First joint of funicle longer than second. *Prothorax* feebly convex; basal three-fourths subparallel, base distinctly trisinate, not much wider than apex, walls almost vertical; with dense, not very small, and somewhat irregular punctures; surface nowhere level nor distinctly tuberculate; with a narrow, distinct median carina continuous from base to apex. *Elytra* about once and one-half the length of prothorax and at base very little wider, sides not rounded but considerably increasing in width to middle, thence strongly diminishing to apex; seriate-punctate punctures oblong, neither very large nor close together; third, fifth, and seventh interstices raised in places, but especially at base, the seventh with a somewhat sinuous outline; below the seventh the flanks from base to apical third are inwardly oblique highly polished and with three distinct rows of small, distant punctures. *Abdomen* with dense concealed punctures. Posterior *femora* extending to apical segment. Length,  $3\frac{1}{2}$  mm.; rostrum,  $\frac{4}{5}$  mm.; width,  $1\frac{1}{4}$  mm.

*Hab.*—New South Wales: Richmond River (A. M. Lea).

In one of the (two) specimens under examination the upper-surface has been considerably abraded, and it is from this one that the sculpture has been described; the punctures of the other specimen are almost concealed except on the glabrous portion of the elytra. The sutures between the metasternum and its episterna are rather indistinct.

#### GYMNOPTERUS, n. g.

*Head* large, convex, not concealed. Eyes small, elongate-ovate, widely separated, moderately coarsely faceted. Rostrum short, wide and feebly curved, a shallow groove on each side above scrobe. Antennæ stout; scape inserted in middle of rostrum, shorter than funicle; basal joint of the latter elongate; club large, ovate, much wider than funicle. *Prothorax* convex, transverse, sides rounded, base truncate, constriction lightly impressed, ocular lobes obtuse. *Scutellum* absent. *Elytra* ovate, base truncate, shoulders rounded. *Pectoral canal* wide and deep, terminated between four anterior coxæ. *Mesosternal receptacle* rather suddenly elevated, emar-

gination widely transverse; cavernous. *Metasternum* short; episterna not traceable. *Abdomen* with distinct sutures; two basal segments large, first as long as second and third combined, apex rather strongly incurved, intercoxal process widely truncate; third and fourth narrow, with deep sutures, their combined length equal to that of fifth and slightly shorter than that of second. *Legs* rather long; posterior coxæ touching elytra; femora linear, feebly grooved, edentate, posterior passing elytra; tibiæ compressed and (except at base) straight, tarsi moderately long, third joint wide and deeply bilobed, fourth elongate. Ovale, strongly convex, feebly squamose, non-tuberculate, apterous.

Placed amongst the allies of *Poropterus*, although perhaps not very close to any of them. The small size and shining body of the only known species is suggestive of affinity with *Idotasia*, but the abdomen and femora are utterly different to those of that genus. It is perhaps a connecting-link between the two groups.

Gymnoporopterus pictipes, n. sp.

Black, shining, antennæ and tarsi red. Upper-surface glabrous except for a few indistinct scales contained in punctures; sides of rostrum, under-surface and legs, with white, stout, round scales, usually in feeble clusters.

*Head* with rather large punctures, base impunctate and slightly iridescent. Rostrum not much longer than head, about twice as long as wide, sides incurved to middle; with large, round punctures. *Prothorax* moderately transverse; with moderately large but irregularly, and not very thickly, distributed punctures. *Elytra* not twice the length of and at base no wider than prothorax, widest at basal third, nowhere parallel-sided; with series of rather small and distant, but round and deep punctures, with series of much smaller punctures intervening; interstices between the punctures not separately convex. Two basal segments of *abdomen* with large, round, sparse punctures; apical segment rather densely punctate. *Femora* densely punctate. Length, 3 mm.; rostrum,  $\frac{2}{3}$  mm.; width,  $1\frac{1}{2}$  mm.

*Hab.*—Queensland (Rev. T. Blackburn, No. 4685), Endeavour River (Macleay Museum).

The elytra are absolutely without striæ. The patches of white scales are very distinct on the legs and sides of rostrum.

Microcryptorhynchus echinatus, n. sp.

Brownish-red, antennæ and tarsi paler. Very densely clothed with muddy-grey scales, which entirely conceal the



derm, except the apical half of rostrum (which is smooth and shining). Upper-surface and legs with numerous long, dark, more or less erect, stout scales or setæ: these project forward from the front of the prothorax, on the elytra are confined to the alternate interstices, and condensed into a loose fascicle on the third interstice at summit of posterior declivity; they are as numerous on the femora as on the tibiæ.

*Rostrum* moderately coarsely punctate in front of antennæ; sculpture concealed behind them. *Prothorax* not much longer than wide, sides rounded near base, slightly constricted near apex; with dense and rather large but entirely concealed punctures. *Elytra* raised above, not twice as long as prothorax and not much wider; from basal fifth to apical third subparallel; with series of large, round and deep, but entirely concealed punctures; alternate interstices feebly raised. Length,  $1\frac{1}{2}$  mm.; rostrum,  $\frac{1}{3}$  mm.; width,  $\frac{2}{3}$  mm.

*Hab.*—New South Wales: Sydney, Gosford (A. M. Lea).

The size varies to a slight extent, but there is not half a millimetre difference between the largest and smallest specimens under examination. I have been unable to abrade the under-surface, but the punctures there (or at least on the metasternum and two following segments) are evidently of large size. The postmedian fascicles of the elytra are very distinct, although each is seldom composed of more than six or seven of the elongate scales; and will readily distinguish the species from *pygmaeus*, than which it is also slightly larger.

*MICROCRYPTORHYNCHUS CYLINDRICOLLIS*, n. sp.

Reddish-brown, antennæ paler. Densely clothed with muddy-grey scales, which entirely conceal the derm, except the apical half of the rostrum (which is smooth and shining). Upper-surface and legs with stout, suberect, moderately long (but much shorter than in the preceding species) and rather pale scales.

*Prothorax* about once and one-fourth as long as wide, sides almost perfectly parallel, apex as wide as base. *Elytra* slightly wider than, not twice the length of and slightly raised above prothorax. Length, 2 mm.

*Hab.*—Western Australia: Mount Barker (A. M. Lea).

The figure<sup>(1)</sup> of the Japanese *Catabonops monachus* will give a very good idea of the appearance of this minute weevil. The punctures are evidently much the same as in the preceding species, the clothing is rather less dense, the stout

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(1) A. S. E. Belg., xviii., 1875, pl. ii., fig. 7.

erect scales are paler, much shorter, and less (though still very) distinct; the most noticeable differences, however, are the shape of the prothorax and non-elevation of the elytra. Only having one specimen under examination it has not been abraded.

Subfamily COSSONIDES.

COSSONUS INCISUS, Pasc.<sup>(2)</sup>

Two specimens of this species were sent to me by Dr. Gestro, of the Genoa Museum. One from Celebes (the type locality) and one from Somerset (Queensland); the latter locality was not recorded by Pascoe in dealing with the insects collected by D'Albertis. The species may be readily distinguished by the shape of the prothoracic impression; this is in the form of an elongate triangle, with a carina across the middle, so that it resembles the letter A.

(2) Ann. Mus. Civ. Gen., 1885, p. 317.

## SOUTH AUSTRALIAN POLYPLACOPHORA.

By WILLIAM G. TORR, M.A., B.C.L. (Oxon.), LL.D.  
(Dublin and Adelaide).

[Read September 12, 1912.]

## PLATES V. TO VII.

I have been invited by the President of the Royal Society of South Australia, Dr. J. C. Verco, to write a paper on the Polyplacophora, or multivalve-molluscs, of South Australia.

Since the publication of Mr. W. T. Bednall's paper on "South Australian Polyplacophora" in the Proceedings of the Malacological Society of London, vol. ii., part 4, April, 1897, a great impetus has been given to this interesting study in South Australia, and numbers of collectors have been at work, the following having written papers on the subject:—

W. G. Torr and Edwin Ashby, Trans. Roy. Soc., S.A., 1898; Edwin Ashby, Trans. Roy. Soc., S.A., 1900; M. M. Maughan, Trans. Roy. Soc., S.A., 1900; W. T. Bednall and E. H. Matthews, Proc. Mal. Soc., London, vol. vii., part 2, June, 1906; Tom Iredale, Proc. Mal. Soc., London, June, 1910, and September, 1910.

To these writers I make my acknowledgments, as well as to the publishers of Tryon's *Man. Conch.*, vols. xiv. and xv.; E. R. Sykes, on Victorian Polyplacophora, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896; A. F. Basset Hull, *Australian Naturalist*, April, 1908; W. G. Torr, *Western Australian Polyplacophora*, Trans. Roy. Soc., S.A., vol. xxxv., 1911; Torr and May, Proc. Royal Society of Tasmania, 1912; Henry Suter, *New Zealand Polyplacophora*, Journ. Mal., 1905, vol. xii., part 4; C. Hedley and A. F. Basset Hull, *Records Australian Museum*, vol. vii., No. 4, 1909; and Prof. J. Thiele (Berlin), *Die Fauna Südwest-Australiens*, Band iii., Lieferung ii., 1911.

There are other numerous references to Polyplacophora in various papers which I have examined:—

G. F. Angas' list, Proc. Zool. Soc., London, January, 1865, consisted of fourteen species; of these four have been omitted as uncertain.

D. J. Adcock's list, published in 1893, contained eighteen species, of which eight have not been identified.

Mr. Bednall, in the Proc. Mal. Soc., London, 1897, published thirty-seven species, of which one has been omitted.

Messrs. Maughan, Torr and Ashby, and Bednall and Matthews have brought up the list to fifty-two species, and this paper will raise the number to sixty-one identified species. Some of the names have had to be changed owing to Dr. Thiele and Mr. Tom Iredale's observations of the original specimens of Blainville and others.

My collection of chitons extends over practically the whole of the South Australian coastline from Port MacDonnell to Nuyt Archipelago in the Australian Bight.

The South Australian Polyplacophora include the following families:—*Lepidopleuridae*, Pilsbry; *Ischnochitonidae*, Pilsbry; *Mopaliidae*, Pilsbry; *Acanthochitidae*, Pilsbry; *Cryptoplacidae*, Dall; and *Chitonidae*, Pilsbry.

The order of exposure of South Australian Polyplacophora, *mutatis mutandis*, is *P. albida*, Blainville, on exposed rocks at or near high-water mark, sometimes accompanied by *P. costata*, Blainville, with *P. matthewsi*, Iredale, under rocks in deeper water. *I. crispus* is in abundance almost everywhere a foot or two below high-water mark, sometimes accompanied by *I. thomasi* or *I. vergatus*. The *Acanthochites* are found in sheltered pools on sandy weed-covered rocks. In deeper pools *I. contractus*, *I. cariosus*, *I. ustulatus*, *I. sulcatus*, and other *Ischnochitonidae* are found, and deeper still *I. smaragdinus*, *I. ptychius*, *Lorica volvox*, *Loricella angasi*, *I. pilsbryi*, and most of the true chitons, *jugosus*, *tricostalis*, *exoptandus*, *calliozona*, and *torriamus*. On the west side of St. Vincent Gulf I have found true chitons on exposed rocks in shallow pools at low water. *I. tateanus*, *C. verconis*, *A. verconis*, and *C. bednalli* are, as a rule, obtained only by dredging.

#### Fam. LEPIDOPLEURIDÆ, Pilsbry.

##### 1. *Lepidopleurus inquinatus*, Reeve, 1847.

*Chiton inquinatus*, Reeve, Conch. Icon., sp. 154.

*Ischnochiton inquinatus*, Reeve: Pilsbry, Man. Conch., ser. i., vol. xiv., p. 90.

*Lepidopleurus liratus*, H. Adams and Angas, Proc. Zool. Soc., 1864, p. 192; Angas, loc. cit., 1865, p. 187; Pilsbry, Man. Conch., ser. i., vol. xv., p. 101.

*L. inquinatus*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 141; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 86.

Specimens of this diminutive chiton have been found all along the coast of South Australia extending from Port MacDonnell to St. Francis Island, Nuyt Archipelago. The writer has specimens from Corney Point, Wool Bay, Marino,

Noarlunga, Robe, Cape Jaffa, Minlacowie, and St. Francis Island. Large specimens, 20 mm. long and 8 mm. broad, have been dredged in St. Vincent Gulf by Dr. Verco.

## 2. *Lepidopleurus matthewsianus*, Bednall, 1906.

*Lepidopleurus matthewsianus*, Bednall, Proc. Mal. Soc., London, vol. vii., part 2, June, 1906.

Specimens have been obtained from Port MacDonnell, Encounter Bay, Normanville, Noarlunga, Marino, Wool Bay, Corney Point, Hardwicke Bay, and St. Francis Island. I have also taken it at Burnie and Devonport, on the north-west coast of Tasmania. The sanguineous appearance of the foot of this animal is peculiar.

## Fam. ISCHNOCHITONIDÆ, Pilsbry.

### 3. *Callochiton platessa*, Gould, 1846.

*Callochiton platessa* (Gould): Haddon, "Challenger" Report, p. 15; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 141; Proc. Acad. Nat. Sci., Philad., 1894, p. 71; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 86.

*Chiton platessa*, Gould, Proc. Boston Soc. Nat. Hist., vol. ii., 1846, p. 143; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 49; Gould, U.S. Explor. Exped., p. 320, atlas, figs. 434, 434a.

*Lepidopleurus platessa*, Gould, Otia (Rectifications), 1862, p. 242.

*Chiton crocinus*, Reeve, Conch. Icon., pl. xxii., fig. 146, 1847.

*Callochiton crocinus*, Reeve: Pilsbry, Man. Conch., ser. i., vol. xiv., p. 50; vol. xv., p. 67.

*Leptochiton versicolor*, A. Adams, Proc. Zool. Soc., 1852, p. 92, May, 1854; Angas, Proc. Zool. Soc., 1867, p. 223.

*Lepidopleurus empleurus*, Hutton, Trans. N.Z. Inst., vol. iv., p. 178; Man. N.Z. Moll., p. 113, 1880; Pilsbry, Man. Conch., ser. i., vol. xv., p. 67.

Common in New South Wales, but rare in South Australia. Specimens have been obtained from Cape Jaffa, Second Valley, Aldinga, Marino, Corney Point, and valves have been dredged in Spencer Gulf. A very fine specimen, measuring 24 × 13 mm., was found by Mr. F. L. Saunders at Marino.

### 4. *Callochiton rufus*, Ashby, 1910.

*Callochiton rufus*, Ashby, Trans. Roy. Soc., S.A., 1900, p. 87; Die Fauna Südwest-Australien, Thiele, Band. iii., Lieferung ii., 1911.

One specimen only of this beautiful chiton was dredged by Dr. Verco in St. Vincent Gulf. It has been found by Dr. Thiele in Shark Bay, Western Australia.

5. *Ischnochiton* (*Stenochiton*) *juloides*, Adams and Angas, 1865.

*Stenochiton juloides*, Adams and Angas, Proc. Zool. Soc., 1864, p. 193; *op. cit.*, 1865; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 55.

*Ischnochiton* (*Stenochiton*) *juloides*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 142; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 87.

*Hab.*—Holdfast Bay (Angas), Largs Bay (Adcock), Yorke Peninsula (Matthews).

I have specimens (whole or valves) from St. Francis Island (dredging and shore), Port MacDonnell, Carrowa (West Coast), Hardwicke Bay, Spencer Gulf (dredging), Kangaroo Island, Troubridge Reef, Glenelg, Brighton, Largs Bay, and Fowler Bay. Valves are frequently found in shell sand. Mr. A. R. Riddle informs me that he has found them on *Pinna inermis*, old boots and bottles, and especially near the roots of *Zostera* at an extremely low tide, by dredging or with a grappling-iron. They are rarely found in shallow water.

6. *Ischnochiton* (*Stenochiton*) *pilsbryanus*, Bednall, 1896.

*Ischnochiton* (*Stenochiton*) *pilsbryanus*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 142.

Type specimens found on seaweed, Troubridge Shoal, St. Vincent Gulf.

I have specimens from Tapley Shoal living in *Zostera* (seaweed), dredged specimens from Spencer Gulf and off St. Francis Island, live specimens and numerous valves in from 6 to 20 fathoms of water. Two large specimens were found by Mr. F. L. Saunders on seaweed at Aldinga; they measured  $9.5 \times 3$  mm. A number of very fine variegated specimens of this chiton have been found near the roots of *Zostera* at Wool Bay and other places by Mr. A. R. Riddle. The largest specimen measures  $17 \times 5$  mm.

7. *Ischnochiton* (*Stenochiton*) *pallens*, Ashby, 1900.

*Ischnochiton* (*Stenochiton*) *pallens*, Ashby, Trans. Roy. Soc., S.A., 1900.

Dredged in St. Vincent Gulf by Dr. Verco. I found one specimen in shell sand at Aldinga, and Mr. Zietz collected a pretty buff specimen from Largs Bay. This species differs from *I. pilsbryanus* in the rapid tapering of the tail valves. As I have not had access to the type specimens of either *pilsbryanus* or *pallens*, it may be that my specimens may have to be reconsidered.

8. *Ischnochiton* (*Heterozonit*) *cariosus*, Carpenter, MS.:

Pilsbry, 1873.

*Heterozona cariosa*, Carpenter, MS.: Pilsbry, Man. Conch., ser. i., vol. xiv., p. 65; vol. xv., p. 82.

*Ischnochiton* (*Heterozona*) *cariosus*, Pilsbry: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 143; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 87.

This shell is widely distributed. It is abundant in Spencer and St. Vincent Gulfs, and the writer has collected it on St. Francis Island and all around the coast of Western Australia as far as Fremantle. It is often covered with *Serpularia* and has a *cariosus* appearance, hence its name.

9. *Ischnochiton pilsbryi*, Bednall, 1896.

*Ischnochiton pilsbryi*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 143.

Found at Sultana Bay (Bednall) and at Hickey Point, Y.P., and St. Francis Island by the writer. Most of the specimens were found on rocks embedded in the sand. At first sight it might be mistaken for *crispus* or *cariosus*, but markings and girdle scales are very distinct, and all the specimens are "uniform ochraceous-yellow."

10 *Ischnochiton ustulatus*, Reeve, 1847.

*Chiton ustulatus*, Reeve, Conch. Icon., sp. 102; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 96.

*Ischnochiton ustulatus*, Carpenter, MS.: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 88.

*Lepidopleurus ustulatus*, Angas, P.Z.S., 1867, p. 222.

When alive this shell is very brilliant, almost crimson; but it loses its colour in formalin, methylated spirits, or when dry, and retains its singed appearance from which it derives its name. The writer has traced it all around the coast from Cape Jaffa to St. Francis Island. He also found it in Western Australia. An abnormal specimen was found by Mr. F. L. Saunders at Second Valley. It is much broader than the usual types; it measures  $37 \times 18$  mm.

This chiton easily changes its *habitat*. Scores of specimens seen by Mr. Matthews on Yorke Peninsula one week were not able to be discovered the week following.

11. *Ischnochiton crispus*, Reeve, 1847.

*Chiton crispus*, Reeve, Conch. Icon., sp. 120; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 89.

*Ischnochiton haddoni*, Pilsbry, Man. Conch., ser. i., vol. xiv., p. 88.

*Ischnochiton crispus*, Reeve: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 145; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 87.

*Chiton longicymba*, Blainville: Sowerby, Conch. Illus., fig. 67; Reeve, Conch. Icon., pl. xxiv., fig. 163 (*non* Blainville).

*Ischnochiton longicymba*, Blainville: Hutton, "Challenger" Report, p. 17 (*non* Blainville).

This very variable shell is found abundantly on the coasts of New South Wales, Victoria, Tasmania, and South Australia. The writer has specimens from almost every part of the South Australian coast from Port MacDonnell to St. Francis Island in the Australian Bight. It is not found in Western Australia. I collected a *five-valved* specimen at Ulverstone, Tasmania.

No chiton varies so much in colouration as *I. crispus*. I have pale emerald-green, black with a white stripe on the dorsal area, and white with a black stripe, brown and yellow. The commonest kind is a pale-yellow ochre colour. A very beautiful species has been called var. *decoratus*. It has a milky-white ground with regular green or brown longitudinal markings continued throughout the valves. The description given by Pilsbry, *loc. cit.*, of *I. haddoni* agrees with the shell better than any other I have seen.

## 12. *Ischnochiton fruticosus*, Gould, 1846.

*Chiton fruticosus*, Gould, Proc. Boston Soc. Nat. Hist., ii., p. 142; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 91; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 145.

*Ischnochiton fruticosus*, Gould: Pilsbry, Proc. Acad. Nat. Soc., Philad., 1894, p. 72.

This common New South Wales species is very rare in South Australian waters. The writer has examined hundreds of specimens similar to *fruticosus* and has only found one in South Australia with the striations on the girdle scales. One specimen only was found by Mr. E. H. Matthews on Southern Yorke Peninsula.

## 13. *Ischnochiton contractus*, Reeve, 1847.

*Chiton contractus*, Reeve, Conch. Icon., sp. 78; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 93.

*Ischnochiton contractus*, Reeve: Pilsbry, Man. Conch., ser. i., vol. xiv., p. 93; Nautilus, vol. viii., p. 129; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 87; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 145.

*Chiton pallidus*, Reeve, Conch. Icon., sp. 92, March, 1847; Pilsbry, Man. Conch., ser. ix., vol. xiv., p. 89.

Other synonyms are given by Pilsbry which are evidently intended, according to Bednall and Iredale, for *I. decussatus*.



Many scores of specimens are in my cabinet from both Gulf St. Vincent and Spencer Gulf, also from Hopetoun and Albany, in Western Australia. I have dried specimens 46 mm. long and 22 mm. broad.

14. **Ischnochiton variegatus**, Adams and Angas, 1864.

*Lepidopleurus variegatus*, H. Adams and Angas, Proc. Zool. Soc., 1864, p. 192; Pilsbry, Man. Conch., ser. i., vol. xv., p. 102.

*Ischnochiton variegatus*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 146.

This species is found in Spencer and St. Vincent gulfs. It will probably be classed under *I. crispus*, which it closely resembles. Pilsbry has no plates of this variety in his Manual, and the description given would equally apply to *I. crispus*. Bednall says it attains a length of two-thirds of an inch. I have a number of specimens from the coasts of Yorke Peninsula, Port MacDonnell, Cape Jaffa, and Marino. It is probably a cream-coloured variety of *crispus*.

15. **Ischnochiton sulcatus**, Quoy and Gaimard, 1834.

*Chiton sulcatus*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 385.

*C. decussatus*, Reeve, Conch. Icon., 1847, pl. xviii., fig. 107.

*C. castus*, Reeve, op. cit., pl. xxii., fig. 145.

*Lepidopleurus speciosus*, Adams and Angas, P.Z.S., 1864, p. 192; 1865, p. 187.

*Gymnoplax urvillei*, Rochebrune, Bull. Soc. Philom., Paris, 1880-1, p. 121.

*Ischnochiton sulcatus*, Quoy and Gaimard: Pilsbry, Man. Conch., 1893, ser. i., vol. xiv., p. 138; Iredale, Proc. Mal. Soc., London, vol. ix., part 2, June, 1910, p. 91.

*I. decussatus*, Reeve: Bednall, Proc. Mal. Soc., London, 1897, vol. ii., p. 146.

The most beautiful of the South Australian *Ischnochitons* may be easily distinguished by being broader in proportion to its length than the majority of *Ischnochitons*. It favours the edges of rocks, and is often found on top of stones and on the razor-like bivalve, *Pinna inermis*. The colours are very various—blue-green, rich brown, cream with brown dorsal areas, ochreous-yellow with splashes of purple, straw-colour with dark-brown splashes, brown and green with cream-white dorsal areas, and uniformly cream. I have dried specimens, 46 mm. long and 27 mm. broad. Juveniles may be easily distinguished by the regular pustules in the anterior and posterior valves and the lateral areas of the median valves. They are common in Spencer and St. Vincent gulfs, Streaky Bay, and West Coast.

### 16. *Ischnochiton ptychius*, Pilsbry.

*Ischnochiton ptychius*, Pilsbry: Nautilus, vol. viii., p. 53; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 147.

It is often placed among *crispus*, but as a rule is found in much deeper water. I have specimens from Robe, Cape Jaffa, Second Valley, Normanville, Marino, and Southern Yorke Peninsula. Good specimens were taken by Mr. A. R. Riddle on broken *Haliotidae* at Marion Reef, and also in a deep rock pool at Black Hill, near Port Moorowie. The strong serrations at the sutural margins of the valves, mentioned by Mr. Bednall, are plainly distinguishable in some specimens. In others they are missing, although taken at the same spot and similar in every other particular.

‘It is a small oval pink-tinged shell, with wrinkled striations on the dorsal areas, and somewhat coarse concentric sulcations on the lateral areas, which are strongly serrated at the sutural margin.’

It is somewhat difficult for a beginner to separate it from *I. crispus*.

*I. ptychius* has finely striated girdle scales.

### 17. *Ischnochiton tateanus*, Bednall, 1896.

*Ischnochiton tateanus*. Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 147; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 87.

It may be distinguished by its form. In well-preserved specimens the width is nearly two-thirds of the length, and the fine serrations on the posterior edge of the lateral areas of the median valve are distinctly seen in most of the specimens.

*I. tateanus* is rarely found near the shore. It is a deep-water species. Dr. Verco has dredged several in St. Vincent and Spencer gulfs, and valves have been taken at St. Francis Island in 19 fathoms of water. A beautiful specimen was taken by Mr. F. L. Saunders at Marino. It is a pale-chocolate on the dorsal area, throughout the valves, and the lateral and pleural areas of the second, sixth, and seventh valves are creamy-white.

### 17A. *Ischnochiton wilsoni*, Sykes, 1896.

*Ischnochiton wilsoni*, Sykes, Proc. Mal. Soc., vol. ii., part 2, July, 1896, p. 89.

One specimen dredged by Dr. Verco and one procured by Mr. Matthews are probably all that have been found in South Australian waters. The writer has one specimen 9 × 5 mm. from Marino (?). In this sample the granulations

in the pleural area are, under a  $\frac{1}{4}$ -in. lens, arrow-shaped, with the point towards the dorsal area.

Mr. Matthews has kindly sent me a very fine specimen,  $24 \times 14$  mm., which I take to be *I. wilsoni*. It has not the rosy-pink of the *type*, but the splashes of grey-brown and white correspond with Syke's drawing. The girdle scales are black, amber, and pearly-white, the rich brown splashes predominating. As far as I can decide with an undissected specimen, the anterior valve has nine and the posterior valve eight slits. The striations of the girdle scales are very distinct, four to seven striæ on each scale.

### 18. *Ischnochiton smaragdinus*, Angas, 1867.

*Lophyrus smaragdinus*, Angas, Proc. Zool. Soc., 1867, p. 115; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 137, vol. xv., pl. xv., fig. 27.

*Lepidopleurus smaragdinus*, Carpenter, MS.

*Ischnochiton smaragdinus*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4., April, 1897, p. 148.

*I. (Haploplax) smaragdinus*, Angas: Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 72.

The drawing of this shell in Pilsbry's Manual is very unsatisfactory. Both Angas' and Carpenter's descriptions seem incomplete. This shell may be distinguished by the blue-green spots on an olive-brown ground and the very pearly scales on the girdle. It is generally found in deeper water than the majority of *Ischnochitons*. It has the blue spots of *I. lentiginosus* of New South Wales, but it is not so carinated nor are the lateral areas so distinct as in *I. lentiginosus*. I have specimens from Yankalilla, Normanville, Second Valley, Aldinga, Marino, and elsewhere. It is exceedingly common on the north-west coast of Tasmania, where it is found in shallower water than in South Australia. I have considerable difficulty in separating this species from *Ischnochiton resplendens*, Bednall and Matthews, Proc. Mal. Soc., London, vol. ii., part 2, June, 1906.

### 19. *Ischnochiton virgatus*, Reeve, 1848.

*Chiton virgatus*, Reeve, Conch. Icon., sp. 192; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 78.

*Trachydermon virgatus*, Reeve: Carpenter, MS., p. 22.

*Ischnochiton virgatus*, Reeve: Carpenter, MS., p. 106; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 148.

This very pretty diminutive chiton, so ably described by Mr. Bednall, *loc. cit.*, has been found all along the South Australian coast from Port MacDonnell to St. Francis Island. I have specimens from nineteen different places, in-

cluding Kangaroo Island. I also collected it at Albany, Western Australia. Some very dark specimens were collected at Streaky Bay, which seemed a variety if not a new species. Under a  $\frac{1}{4}$ -in. lens the girdle scales of *virgatus* are minutely striated. Carpenter says they are *not* striated. I have counted from ten to twelve striæ

## 20. *Ischnochiton thomasi*, Bednall, 1896.

*Ischnochiton thomasi*, Bednall. Proc. Mal. Soc., London, vol. ii., part 4, April, 1897.

The polished mottled appearance and pearly girdle scales are the distinctive features of this chiton. There are several varieties. I have specimens from Robe, Cape Jaffa, Second Valley, Normanville, Aldinga, Marino, Minlacowie, Southern Yorke Peninsula, and Venus Bay. It thus traverses the greater part of the South Australian coastline.

## 21. *Ischnochiton resplendens*, Bednall and Matthews, 1906.

*Ischnochiton resplendens*, Bednall and Matthews. Proc. Mal. Soc., London, vol. vii., part 2, June, 1906.

After careful examination of a number of specimens of this very beautiful *Ischnochiton* I can only place it as a colour variety of *I. smaragdinus*. While the appearance of some specimens varies considerably from *smaragdinus*, by putting a series, they run into one another, till it becomes practically impossible to separate them. I have *smaragdinus* 20 mm. long by 12 mm. broad, which is nearly as large as the type specimen of *resplendens*, and the colour-marking is hardly sufficient to make a new species. I have specimens from Port MacDonnell, Beachport, Cape Jaffa, Robe, Encounter Bay, Marino, Kangaroo Island, Minlacowie, Hardwicke Bay, and Corney Point. My specimens from Robe resemble Mr. Bednall's description. Specimens have also been taken in Wool Bay by Mr. A. R. Riddle.

## 22. *Ischnochiton gryei*, Filhol, 1880.

*Tonicia gryei*, Filhol, Comptes Rendus, 1880, vol. xci., p. 1095.

*Lepidopleurus melanterus*, Rochebrune, Bull. Soc. Philom., Paris, 1883-4, p. 37.

*Ischnochiton parkeri*, Suter, Proc. Mal. Soc., 1897, vol. ii., p. 186.

*I. fulvus*, Suter, Journ. Malac., 1905, vol. xii., part 4, p. 66; Iredale, Trans. N.Z. Inst., 1907 (1908), vol. xi., p. 373.

*I. gryei*, Filhol: Iredale, Proc. Mal. Soc., London, vol. ix., part 2, June, 1910, p. 91.

Going through Mr. Suter's specimens in Auckland, New Zealand, the author remarked that he had seen specimens

of a red *crispus* in South Australia similar to what Suter called *I. fulvus*. On his return to South Australia some specimens were sent to Mr. Suter, some of which were identified with *I. fulvus*, others with *I. crispus*. Some very beautiful specimens of *I. gryes* were taken off Port MacDonnell jetty and Cape Jaffa. The identification will require future consideration. Mr. Sanders found several diminutive specimens at Second Valley, which I take to be *gryes*.

### 23. *Ischnochiton* (*Ischnoradsia*) *novæ-hollandiæ*,

Gray and Reeve, 1847.

*Chiton novæ-hollandiæ*, Gray, M.S.: Reeve, Conch. Icon., sp. 142; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 145.

*C. (Lophyrus) australis*, Tenison-Woods, Proc. Roy. Soc. Tasmania, 1877, p. 46 (non Pilsbry).

*Ischnochiton (Ischnoradsia) novæ-hollandiæ*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 150.

Strongly resembles *I. australis*, Sowerby, but the lateral areas of *australis* are much more deeply sulcated than those of *novæ-hollandiæ*, and the pleural areas of the former are longitudinally ribbed, although I have found some *novæ-hollandiæ* slightly ribbed in the pleural areas.

Some specimens in my collection labelled Marino, South Australia, are certainly *I. australis*, but further investigation must be made before placing it on the list of South Australian chitons.

*I. novæ-hollandiæ* favours the open ocean beaches. I have specimens from Encounter Bay, Tungkalilla (large numbers), Kangaroo Island, and Second Valley; also from Penguin, Stanley, Wynyside, and Devonport in Tasmania, and Beaumaris, New South Wales. One dried specimen is 65 mm. long and 35 mm. broad. *I. australis* is common in New South Wales. The Tasmanian species show longitudinal riblets in the pleural areas.

Subfam. CALLISTOPLACINÆ, Pilsbry.

### 24. *Callistochiton antiquus*, Reeve, 1847 (?).

*Chiton antiquus*, Reeve, Conch. Icon., t. 25, f. 169 (poor)

*Lepidopleurus antiquus*, Angas, P.Z.S., 1867, p. 223.

*Callistochiton antiquus*, Carpenter, MS., and Haddon, "Challenger" Polyplac., p. 20.

*Chiton (Callistochiton) antiquus*, E. A. Smith, Zool. Coll. "Alert," p. 79.

*Callistochiton sarcophagus*, Carpenter, MS.

*C. antiquus*, Reeve: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 150; Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 73.

Very often found covered with calcareous matter. I have traced it from Port MacDonnell through both gulfs to St Francis Island. Some beautiful dark-brown specimens came from Mr. Anderson, of Second Valley, and rich red (iron-stained ?) ones from Cape Jaffa. Its sculpture and rounded appearance easily differentiates it from other chitons. It is our only South Australian *Callistochiton*. "This genus differs from *Ichnochiton* in the peculiar insertion-teeth, which are curved into ribs as if festooned, in the relation of the slits to the external ribs, and in the tail valve, which is often peculiarly humped" (Pilsbry, *Man. Conch.*, ser. i., vol. xiv., p. 260). This chiton has a very wide range, and has been collected by the author in places as far apart as Queensland and Western Australia.

Fam. CHITONIDÆ, Pilsbry.

25. **Onithochiton ashbyi**, Bednall and Matthews, 1906.

*Onithochiton ashbyi*, Bednall and Matthews, *Proc. Mal. Soc.* London, vol. vii., part 2, June, 1906, p. 92.

As far as I am aware, only one specimen of this chiton has been discovered. It was found by Mr. Ashby at Aldinga, and to him I am indebted for the specimen. It is our only *Onithochiton*, and the eyes are of a pearly appearance set in its cream-coloured valves. The smooth warty appearance will easily distinguish this shell.

26. **Chiton tricostalis**, Pilsbry, 1894.

*Chiton (canaliculatus, var. ?) tricostalis*, Pilsbry: *Nautilus*, vol. viii., 1894, p. 54.

*C. tricostalis*, Pilsbry: Bednall, *Proc. Mal. Soc.*, London, vol. ii., part 4, April, 1897.

This "handsomely sculptured shell" assumes an endless variety of colour. I have specimens, red and green, pink and black, green and white, creamy, cream with black spots, yellow with black spots, etc. The second valve is often of a distinctive colour. It is *bicostalis* in small specimens, the middle rib in the lateral areas begins when about half-grown. Some valves have four ribs. I have specimens from Capes Jaffa and Jervis, several places in Gulf St. Vincent, Southern Yorke Peninsula, and St. Francis Island. I have collected it in Western Australia, and have specimens from New South Wales.

27 **Chiton calliozona**, Pilsbry, 1894.

*Chiton (Æreus, var.) calliozona*, Pilsbry: *Nautilus*, vol. viii., 1894, p. 55.

*C. calliozona*, Pilsbry: Bednall, *Proc. Mal. Soc.*, London, vol. ii., part 4, April, 1897, p. 151.

This is the largest of our true chitons. I have one dried specimen measuring 55 × 25 mm. Colour markings very variable; pinks, greens, and bronze-browns are wondrously intermingled, while the minute pearls of the girdle are like rubies, emeralds, etc. It is found on smooth stones in clean sandy pools among seaweed. I have samples from Second Valley, Normanville, Marino, Wool Bay, Hardwicke Bay, and St. Francis Island. Fine specimens were taken at Marion Reef from the shell of living *Pinna inermis* and from broken bottles by Mr. A. R. Riddle. It is very like *Chiton cereus*, Reeve, from New Zealand, but there are marked differences.

### 28. *Chiton jugosus*, Gould, 1846.

*Chiton jugosus*, Gould, Proc. Boston Soc. Nat. Hist., ii., 1846, p. 142; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 178; Gould, Expl. Exped., xii., Moll. and Sh., p. 317, atlas, t. 28, f. 430, 1852. Smith, Zool. Coll. "Alert," p. 78, 1884; Haddon, "Challenger" Polyplac., p. 22, 1886; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 151.

*C. concentricus*, Reeve, Conch. Icon., 1847, sp. 95.

*Lophyrus jugosus*, Gould, Otia, p. 3, 212, 1862; Angas, P.Z.S., London, 1867, p. 222.

*L. concentricus*, P.Z.S., 1867, p. 221.

Hedley and Hull's comparison of *C. jugosus*, *C. torri* (*torrianus*), and *C. cozi*, in Records Australian Museum, vol. vii., No. 4, 1909, p. 262, is very valuable. The New South Wales specimens are not, as a rule, as brightly coloured as those from South Australia. Some from Watson Bay, New South Wales, are pink and brown, others a creamy-white in the six median valves, and the whole shell is broader than those from South Australia. The South Australian specimens are uniform in colour, the pale-blue green markings in the sulcations of the pleural areas are very distinct. It is found in fairly deep water, and loves the ocean rocks. I have specimens from Port MacDonnell, Beachport, Robe, Middleton, Cape Jaffa, Cape Jervis, Second Valley, Normanville, Aldinga, Marino, Venus Bay, and St. Francis Island. It has also been found at Kangaroo Island and Corney Point. Specimens from the last place measure 47 × 25 mm. Strange to say, I have no specimens from Spencer Gulf.

### 29. *Chiton torrianus*, Hedley and Hull, 1909.

*Chiton cozi*, Pilsbry: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 151.

*C. torri*, Hedley and Hull, Records of the Australian Museum, Sydney, vol. vii., No. 4, 1909, p. 262.

*C. hullianus*, Iredale, Proc. Mal. Soc., London, vol. ix., part 2, June, 1910, p. 103.

*C. torrianus*, Hedley and Hull. Mal. Soc. Journ., March, 1911, vol. ix., part 4.

Specimens of this very beautiful chiton were misnamed *C. cori* for some years till the comparison of *C. jugosus*, *C. torrianus*, and *C. cori*, by Hedley and Hull, *loc. cit.* The concentric lines on all valves differentiate it from *C. coxi*, and the sulcations of the pleural areas make it impossible to put it with *C. jugosus*. It is rarely found in the gulfs. I have collected it from Cape Jervis, Kangaroo Island, and Corney Point. Large numbers were found at the latter place by Mr. Walter Klem. Mr. Bednall reports it from Sultana Bay. I have South Australian specimens measuring  $42 \times 25$  mm. and Western Australian  $52 \times 29$  mm. I have collected it all around the coast of Western Australia from Esperance to Fremantle.

### 30. *Chiton limans*, Sykes, 1896.

*Chiton muricatus*, A. Adams, Proc. Zool. Soc., 1852 [May, 1854], p. 91, pl. xiii., fig. 6; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 175, pl. xxxvii., figs. 12, 13; non Telesius, Mem. Acad. Sci., St. Petersburg, ser. v., vol. ix., 1824, p. 483.

*Lophyrus muricatus*, Angas, Proc. Zool. Soc., 1865, p. 186, *loc. cit.*, 1867, p. 222.

*Chiton limans* and *C. carnosus*, Carpenter, MS.: Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 93.

The pointed girdle scales differentiate this rare South Australian chiton from all others of the family in South Australian waters. I have only one specimen from Dr. Verco, labelled Hardwicke Bay, Spencer Gulf. Its colour is a pale-ochreous yellow with light- and dark-brown on the first, second, fourth, fifth, and anterior valve. The markings and girdle scales correspond with specimens of *C. muricatus* from New South Wales.

### 31. *Chiton exoptandus*, Bednall, 1896.

*Chiton exoptandus*, Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 152.

This "much desired" chiton is easily distinguished from others by the uniformity of its pinkish colour-marking so well described by Mr. Bednall, *loc. cit.* It runs through all the gradations of a pinkish-yellow to a burnt sienna. One specimen in my possession has a uniform rich reddish brown strip the full length of the dorsal areas of each valve. I have specimens from Second Valley and valves from Normanville. It is frequently found at Marino, Troubridge, and Edithburgh, and is very plentiful at low tides in Wool Bay. I collected one small specimen in the crevice of a rock at Min-



lacowie and a valve at Corney Point. It has been dredged by Dr. Verco, and seems to confine itself to Spencer and St. Vincent gulfs. My specimens are not the largest found, although I have them  $45 \times 25$  mm.

### 32. *Chiton bednalli*, Pilsbry, 1895.

*Chiton bednalli*, Pilsbry: Nautilus, ix., 1895, p. 90; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896.

This, the most beautiful of all South Australian *Chitonidae*, may be only a colour variety of *exoptandus*, but the uniformity of its green colouring differs so much from the pinkish tinges of *exoptandus* that it may well be classified and named after the *doyen* of *Polyplacophora* writers in South Australia. I have a specimen from Sultana Bay, a valve from St. Francis Island, a valve dredged from 25 fathoms in Thorny Passage, and several specimens dredged by Dr. Verco in Gulf St. Vincent. Size,  $40 \times 20$  mm. One specimen was found by Mr. Kimber at Aldinga (South Australia), and Mr. Sykes reports it from Port Philip.

### 33 *Chiton verconis*, Torr and Ashby, 1898.

*Chiton verconis*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 215.

This chiton strongly resembles the drawings of *Chiton huttoni*, Suter, Trans. N.Z. Inst., vol. xxxviii., 1905, p. 321, pl. xviii., figs. 1-6: but the slope of the tail valve is much steeper in *C. verconis*, and the pointed girdle scales are decidedly different. These scales are very similar to *C. limans*, but in the latter there are no striations. *C. verconis* has been dredged by Dr. Verco in Yankalilla Bay, 9 fathoms; Rapid Head, 9 to 11 fathoms; and in Spencer Gulf. All my specimens have been dredged. Mr. W. D. Reed has dredged it in Spencer Gulf, and it has been taken at Aldinga by Mr. Kimber. I have a very fine specimen labelled Port Fairy (Victoria), from the late Mr. Adcock's collection.

### 34. *Chiton oruktus*, Maughan, 1900.

*Chiton oruktus*, Maughan, Trans. Roy. Soc., S.A., 1900, p. 89.

This shell has been found only on the south-east coast of South Australia. One specimen comes from Cape Jaffa and several have been taken at Port MacDonnell. It ought to be in Victorian waters. Mr. Maughan's description is very helpful, but the plates are very indistinct.

35. **Chiton aureo-maculata**, Bednall and Matthews, 1906.

*Chiton aureo-maculata*, Bednall and Matthews, Proc. Mal. Soc., London, vol. vii., part 2, June, 1906, p. 91.

The type specimen was reported from Marion Reef, Troubridge Island. Mr. Gatcliffe sent me one from Victoria, which at the time I was unable to identify. The Rev. S. J. Martin took a fine specimen at Minlacowie. I have three specimens—one about the size of the type specimen, dredged by Dr Verco in Backstairs Passage (?), one from Corney Point, and the other from Port MacDonnell. It is probably a deep-water shell. I have been unable to detect the "golden spots" on any of my specimens, but one was identified by Mr. Matthews. It is similar to *C. verconis* and *C. limans*, but the girdle scales differentiate it from either. Mr. Martin's specimen is very handsome, a bright reddish-brown colour all over, mottled with dark splashes. It measures 19 × 11 mm.

36 **Lorica volvox**, Reeve, 1847.

*Chiton volvox*, Reeve, Conch. Icon., sp. 31; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 237.

*C. cimolius*, Reeve, Conch. Icon., sp. 14.

*Lorica cimolia*, H. and A. Adams, Ann. Mag. N.H. (2), ix., p. 355; Angas, P.Z.S., 1867, p. 224; 1871, p. 97.

*Aulacochiton volvox*, Shuttl., Bun. Mittheil., 1853, p. 68.

*Chiton rudis*, (?) Hutton, Trans. N.Z., Inst., iv., 1872, p. 179; Man. N.Z. Moll., 1880, p. 113.

*Lorica volvox*, Reeve: Haddon, "Challenger" Polyplac., p. 31; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 153; Suter, Proc. Mal. Soc., London, vol. vii., part 5, June, 1907, p. 297.

I have specimens from Cape Jaffa, Normanville, Second Valley, Marino, Wool Bay, Hardwicke Bay, Corney Point, and some very handsome specimens, with dark-brown dorsal areas, measuring 76 × 45 mm., from St. Francis Island. It has been dredged by Dr. Verco in Gulf St. Vincent, and Mr. A. R. Riddle reports it from Black Hill, near Port Moorowie. In one or two samples I have noticed spiny tufts similar to the *Acanthochitidae*. I cannot detect any sign of tufts in full-grown specimens. *L. volvox* is often encrusted with limy matter.

37. **Loricella angasi**, Adams and Angas, 1864.

*Lorica angasi*, H. Adams and Angas, Proc. Zool. Soc., 1864, p. 193; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 238.

*Loricella angasi*, Adams and Angas: Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 87; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 153.

Found in deep water, sometimes washed up on the beach after storms. It is reported from Sultana Bay (Matthews),

Rapid Bay (Angas), Holdfast Bay (Bednall), and New South Wales (Cox, Brazier). I have specimens dredged by Dr. Verco in Backstairs Passage, and either good specimens or valves from Cape Jervis, Normanville, Aldinga, and Brighton. The splashes of pink colouring are very vivid when preserved in spirits. The peculiarly large and broad anterior valve easily differentiates this species from *L. volvox*. It flattens itself so closely to the rocks and is so covered with foreign growth that I have had the greatest difficulty in detecting one on a rock which I had been examining for some minutes.

Fam. MOPALIIDÆ, Pilsbry.

38 *Plaxiphora albida*, Blainville, 1825.

*Chiton albidus*, Blainville, Dict. Sci. Nat., 1825, vol. xxxvi., p. 547; Pilsbry, Man. Conch., 1893, vol. xv., p. 105.

*C. glaucus*, Quoy and Gaimard. Voy. "Astrolabe." Zool., 1834, vol. iii., p. 376.

(?) *C. petholatus*, Sowerby, Mag. Nat. Hist., new series, iv., p. 289, May, 1840; Conch. Illustr., f. 64, 65, and var. *porphyrius*, f. 59.

*Chatopleura conspersa*, Adams and Angas, P.Z.S., 1864, p. 193; P.Z.S., 1865, p. 187.

*Plaxiphora albida*, Blainville: Thiele, Zool. Chun, 1909, Heft lvi., p. 24, pl. iii., figs. 22, 23.

*P. tasmanica*, Blainville: Thiele, loc. cit., p. 25, pl. iii., figs. 24-26.

*P. bednalli*, Blainville: Thiele, loc. cit., p. 25, pl. iii., figs. 27-30.

*P. petholata*, Sowerby: Pilsbry, Man. Conch., vol. xiv., p. 323; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 154.

*P. albida*, Blainville: Iredale, Proc. Nat. Soc., London, vol. ix., part 2, June, 1910, p. 98.

South Australian chiton-hunters will always be grateful to Mr. Iredale for his elaborate paper on the *Plaxiphoras*, and to Dr. Thiele for his "Revision des Systems der Chitonen." But we part with the old name of *petholata* with regret. Sowerby's description of *petholata*, loc. cit., is a complete account of our *albida*, while Blainville's description of *albida* in Pilsbry, loc. cit., is very poor, and might be that of any of our *Plaxiphora*. Is not there a danger in making the posterior valve the basis of decision? I have several hundred specimens of *Plaxiphora* before me from all parts of Australia, most of them collected by myself, and the tail valves differ so much in the same species according to size and growth that I agree with Iredale that Dr. Thiele, "through lack of specimens, has laid too much stress upon the value of the shape of the valves." The three South Australian *Plaxi-*

*phora* are easily separated. The zigzag markings of *albida* (? *petholata*), the smooth reticulated markings of *costata* (? *glauca*), and the strongly raised nodules of the lateral area in *matthewsi* (? *conspersa*) make the separation easy except in worn specimens.

Mr. Gatliffe, of Victoria, has taken considerable pains in identifying the *Plaxiphora*, and agrees with Dr. Thiele in identifying our *P. glauca* with *P. albida*, Blainville.

*P. albida* is often found at and above high-water mark, and generally adheres to one spot without moving about like other chitons. At Robe I have seen hundreds alive, blistering in the sun. I have collected it all around the coast of South Australia, from Port MacDonnell to Streaky Bay, as well as Queensland, Victoria, and Tasmania. Going out from Streaky Bay 40 miles to St. Francis Island, *P. costata* takes the place of *albida*, and that would seem to continue right on to Western Australia, for I obtained *costata* at Albany, Bunbury, Rottnest Island, and saw nothing of *albida*.

I don't know if pearls are often found in chitons, but I extracted a blue egg-shaped pearly substance from the interior edge of a *Plaxiphora albida*.

### 39. *Plaxiphora matthewsi*, Iredale, 1910.

*Plaxiphora conspersa*, non Adams and Angas: Bednall, Proc. Mal. Soc., London, 1897, vol. ii., p. 154.

*P. matthewsi*, Iredale, Proc. Mal. Soc., London, vol. ix., part ii., June, 1910, p. 99.

This is the rarest of South Australian *Plaxiphora*. It is found in deeper water than either *albida* or *costata*. Its great breadth in proportion to its length easily distinguishes it from either of these. I have specimens from Marino, Troubridge, Second Valley, and St. Francis Island. I have also collected it on the north-west coast of Tasmania. Iredale's description, *loc. cit.*, is very good, but the absence of plates is a hindrance to identification.

The description of *Chætopleura conspersa*, Adams and Angas, P.Z.S., 1864, p. 193; Angas, P.Z.S., 1865, p. 187, agrees so well with *matthewsi* that I place it under a new nomenclature with considerable diffidence.

A very pretty half-grown specimen was taken by Mr. F. L. Saunders at Port Noarlunga. The nodules on the lateral areas are like tear-drops.

### 40. *Plaxiphora, costata*, Blainville.

*Chiton costatus*, Blainville, Dict. Sc. Nat., xxxvi., p. 548; Pilsbry, Man. Conch., vol. xv., p. 105.

*C. glaucus*, Quoy and Gaimard, Voy. "Astrolabe," Zool., iii., p. 376.

*P. glauca*, Quoy and Gaimard: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 154; Pilsbry, Man. Conch., ser. i., vol. xiv., p. 325; Suter, Journ. Mal., 1905, vol. xii., part 4, p. 66.

*Plaxiphora costata*, Blainville: Iredale, Proc. Mal. Soc., London, vol. ix., part 2, June, 1910, p. 97; Thiele, Zool. Chun., 1909, Heft lvi., p. 24.

Mr. Gatcliffe, of Victoria, identifies this shell with *P. bednalli*, Thiele.

I have specimens from Port MacDonnell, Robe, Middleton, Bluff, Encounter Bay, Second Valley, Noarlunga, Wool Bay, Troubridge, Hardwicke Bay, Spencer Gulf, and St. Francis Island. Only an occasional specimen is found on the South-East coast. Numbers were found at Port Noarlunga by Mr. F. L. Saunders. It is more common in Spencer Gulf, and is abundant on St. Francis Island. I have also collected it in Tasmania and in several places in Western Australia. Blainville's description of this shell, in Pilsbry's Manual, *loc. cit.*, is very unsatisfactory. Quoy and Gaimard's description of *P. glauca* does not correspond with my specimens in every particular. I can find no marginal striæ in the anterior portions of the valves. The whole of the shell in unworn specimens is covered with minute microscopic granulations or reticulations. Some specimens have beautiful parallel longitudinal lines of green and black on the median valves. It has seven or eight riblets on the anterior valves.

#### Fam. ACANTHOCHITIDÆ, Pilsbry.

##### 41. *Acanthochites asbestoides*, Smith, 1884

*Chiton (Acanthochiton) asbestoides*, Carpenter, MS.: Smith, Zool. Coll. "Alert," p. 83, pl. vi., fig. 6; Pilsbry, Man. Conch., ser. i., vol. xv., p. 17.

*Acanthochites asbestoides*, Carpenter: Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 79; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 155.

Pilsbry's description of the Fam. *Acanthochitidæ* is very helpful. The South Australian species are constantly being increased, and a splendid opportunity awaits a student who will make this field a special study. The *Acanthos.* differ from nearly all other chitons by having tufts at the sutures, by the large fleshy girdle, and there being little or no distinction between the lateral and pleural areas.

The golden or silvery tufts of *asbestoides*, lying neatly along the suture between the valves, easily distinguishes it from other *Acanthos.*

I have found it in numbers in a sheltered cave at high-water mark on Kangaroo Island. I have specimens from

Beachport, Aldinga, Ardrossan, Stansbury, Point Soutar, Minlacowie, Streaky Bay, and all along the West Coast to St. Francis Island, Albany (Western Australia), and San Remo (Victoria). Dr. Verco has dredged it in Gulf St. Vincent.

Tom Iredale, in Proc. Mal. Soc., London, vol. ix., part 3, September, 1900, p. 155, quotes Dr. Thiele ("Revision des Systems der Chitonen," i., p. 48), "that *lueurni*, Blainville, must replace the familiar *asbestoides*, Smith."

#### 42. *Acanthochites bednalli*, Pilsbry, 1894.

*Acanthochites bednalli*. Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 81; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896.

After going through a great number of specimens of this species and *A. granostriatus*, I am unable to separate them. A series shows the striations in the dorsal area to vary from almost smooth to deep microscopic sulci. I have only one specimen of *A. coci* from New South Wales. If it had been found in South Australia, I should certainly put it in with *A. bednalli*.

It occurs all around the coast of South Australia. Specimens in my collection are from the South-East (Port MacDonnell, Middleton), Gulf St. Vincent (Second Valley, Normanville, Aldinga, Marino, Sultana Bay (Troubridge), Spencer Gulf (Corney Point, Minlacowie), West Coast as far as St. Francis Island. A number of very large specimens, measuring  $30 \times 14$  mm., were found at Kangaroo Island. I have similar ones from Port MacDonnell, Troubridge, and the West Coast.

#### 43. *Acanthochites granostriatus*, Pilsbry, 1894.

*Acanthochites granostriatus*. Pilsbry: Nautilus, vol. vii., 1894, p. 119; Proc. Acad. Nat. Sci., Philad., 1894, p. 81, pl. ii., figs. 1-6, pl. iv., fig. 37; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897.

Similar to *A. bednalli*. Found all along the coast from Port MacDonnell to St. Francis Island.

#### 44. *Acanthochites speciosus*, H. Adams, 1861.

*Cryptoplax (Notoplax) speciosus*, H. Adams, Proc. Zool. Soc., 1861, p. 385.

*Acanthochites speciosus*, H. Adams: Pilsbry, Man. Conch., ser. i., vol. xv., p. 32, pl. i., figs. 23-26; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 156; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 91.

*A. (Notoplax) speciosus*, H. Adams: Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 83, pl. iv., figs. 31-33.

This very hairy chiton, with a girdle, when alive, four or five times wider than the tegmentum, is rare. I have specimens from Aldinga, Marino, Stansbury, and St. Francis Island. Dr. Verco dredged some very large specimens in Gulf St. Vincent. I have one specimen from Stansbury with three very distinct horny riblets on the anterior valve. This may be a monstrosity or a new variety of *speciosus*. I found one specimen at Albany, Western Australia, in which the riblets in the interior valve are distinct but nodulose. Mr. Maughan found a fine specimen washed ashore at Aldinga.

45. *Acanthochites (Notoplax) matthewsi*, Bednall  
and Pilsbry, 1894.

*Acanthochites matthewsi*, Bednall and Pilsbry: Nautilus, vol. vii., 1894, p. 120; (*Notoplax* ?) Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 83, pl. iv., figs. 27-30; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 156; Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 91.

This is the most beautiful and elaborately sculptured of all South Australian *Acanthochitidae*. It somewhat resembles *A. glyptus*, Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 92. I have specimens from Robe, Cape Jaffa, Normanville, Marino, and valves (?) from St. Francis Island. I have seen them collected by Rev. S. J. Martin at Wool Bay. Mr. F. L. Saunders has taken it at Port Victor. A number of specimens were taken from the stomach of a whiting caught near Edithburgh. Robe specimens in spirits measure 30×15 mm. The girdle is very fleshy and wider than the valves themselves. They are of a very delicate milky colour, crossed with splashes of green. Pilsbry evidently had only a dried specimen. The specimens from Cape Jaffa and Normanville are of a ruddy tint—stained, I think, by their proximity to some ferruginous matter on lighthouse or jetty. One remarkable feature in nearly every specimen collected has been the presence of a light-green marking at the beak of the dorsal area on the fifth valve. This helps to distinguish this shell in nearly every instance.

46. *Acanthochites (Loboplax) variabilis*, Adams  
and Angas, 1864.

*Hanleya variabilis*, Adams and Angas, Proc. Zool. Soc., 1864, p. 194; Pilsbry, Man. Conch., ser. i., vol. xv., p. 101.

*Acanthochites (Notoplax ?) variabilis*, Pilsbry, Proc. Acad. Nat. Sci., Philad., 1894, p. 84.

*A. (Loboplax) variabilis*, Adams and Angas: Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 156; Hedley and Hull, Records Australian Museum, vol. xii., No. 4, 1909, p. 266.

This is the most widely distributed of all South Australian *Acanthochitons*. I have found it all around the coast from Port MacDonnell to St. Francis Island. It is found on the South-East coast, St. Vincent and Spencer gulfs, and on the West Coast as well as on Kangaroo Island. I have specimens from twenty-three different places. The pinnatifid appearance of the dorsal area and the very tiny spicules at the sutures, sometimes only horny protuberances, easily differentiate this species from other *Acanthos*. It assumes every variety of shade and colour from a creamy-white to almost black, greens generally predominating. Lighter-coloured varieties are plentiful on Kangaroo Island and the west coast of Yorke Peninsula.

In young specimens the girdle of the *Acanthos* is very small, but when full-grown it has a large fleshy girdle, often twice as wide as the tegmentum. If not kept in spirits this girdle shrinks up considerably.

#### 47. *Acanthochites crocodilus*, Torr and Ashby, 1898.

*Acanthochites crocodilus*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 216, pl. vi., fig. 2.

Two specimens were found at a very low tide at Marino, one valve was taken by Mr. Klem at Corney Point, and Mr. Hedley, Records Aus. Mus., vol. vii., No. 2, 1908, Hedley and May, reports having taken it off the coast of Tasmania. May and Torr, Proc. Roy. Soc., Tasmania, 1912, pp. 35, 36, say this is not *crocodilus*.

The remarkably foliated appearance of the dorsal area and the shagreened pustules on the latero-pleural area make it easy to distinguish this rare species.

#### 48. *Acanthochites cornutus*, Torr and Ashby, 1898.

*Acanthochites cornutus*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 217, pl. vi., fig. 3.

This is evidently a deep-water species. It was dredged by Dr. Verco in 14 fathoms off Ardrossan. Mr. A. R. Riddle took one at Wool Bay. Specimens have been taken at Marino, Normanville, and St. Francis Island.

Its pinnatifid dorsal area, decided carination, and regular rows of pustules are its distinguishing features. Mr. Hedley found eyes on the dorsal area of *A. cornutus*. He used  $\frac{1}{2}$ -in. lens.



49. **Acanthochites** (Notoplax) **wilsoni**, Sykes, 1896.

*Acanthochites* (Notoplax) *wilsoni*, Sykes, Proc. Mal. Soc., London, vol. ii., part 2, July, 1896, p. 92, pl. vi., figs. 2, 2a.

*A. verconis*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 217, pl. vi., figs. 4a-f.

I have to thank Mr. Hedley for drawing my attention to the similarity between *A. wilsoni* and *A. verconis*. I have gone through a number of specimens. There is a great difference between the small and large specimens in colour-markings, the smaller being pearly-white mottled with rose-pink and seemingly more carinated, while the larger specimens are reddish to a deep maroon tint.

Taken in dredgings in St. Vincent and Spencer gulfs by Dr. Verco, by Mr. Ashby at Aldinga, Mr. Kerrison at Cape Jaffa, by Mr. Basset Hull on Long Reef (New South Wales), and by the writer at Robe, Marino, Kingscote, and Minlacowie.

Sykes' description is ably assisted by Mr. Hedley's drawings in Torr and Ashby's paper, *loc. cit.*

50. **Acanthochites** **maughani**, Torr and Ashby, 1898.

*Acanthochites* *maughani*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 218, pl. vii., figs. 5a-f; Hedley and Hull, Records Australian Museum, vol. vii., No. 4, 1909, p. 265.

This species has been found only at Port Victor (Maughan), Bottle and Glass Reef, and Freshwater Bay, New South Wales (Hedley and Hull). I have a number of New South Wales specimens in spirits.

*Acanthochites lachrymosus*, May and Torr, just being published (1912) by the Royal Society of Tasmania, is somewhat similar to *A. maughani*. The shell is much larger, 26×10 mm., but on comparing a co-type with the type of *maughani*, though there is a striking resemblance in detail, there are decided differences.

51. **Acanthochites** **exilis**, Torr and Ashby, 1898.

*Acanthochites* *exilis*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 218, pl. vii., figs. 6a-f.

Three specimens of this very diminutive chiton were dredged by Dr. Verco in 15 fathoms in Spencer Gulf. It is the smallest of all our South Australian *Polyplacophora*, and may be easily distinguished by the bright-red dorsal area of the third valve. One very handsome specimen, measuring 3×2 mm., was dredged by Dr. Verco in 15 fathoms off Wallaroo.

52. **Acanthochites tatei**, Torr and Ashby, 1898.

*Acanthochites tatei*, Torr and Ashby, Trans. Roy. Soc., S.A., 1898, p. 219, pl. vii., figs. 7a-f.

One specimen only of this beautiful little *Acantho* was found at Middleton, Encounter Bay, by the writer. Mr. Gabriel reported finding one at Torquay, Victoria.

53. **Acanthochites costatus**, Adams and Angas, 1864.

*Acanthochites costatus*, Adams and Angas, P.Z.S., 1864, p. 194; Angas, loc. cit., 1867, p. 224.

*Macandrellus costatus*, Dall, Proc. U.S. Nat. Mus., i., p. 81, f. 40 (dentition).

*Chiton (Macandrellus) costatus*, E. A. Smith, Zool. Coll. "Alert," p. 83, t. 6, fig. f.

*Acanthochites costatus*, Adams and Angas: Pilsbry, Man. Conch., ser. i., vol. xv., p. 40, pl. iii., fig. 74.

I have seen two specimens of this chiton. It was taken by Mr. Klem at Corney Point and named by Mr. Bednall. One other very similar I have from St. Francis Island. This shell agrees with the description in Pilsbry, loc. cit., with the exception of the colour, which is of a pinkish hue, and the posterior valve has not the "six more or less distinct radiating ridges," as described by Smith from Coppinger's collection. Mr. Klem's specimen has a hairy girdle. The St. Francis Island specimen is fleshy.

Fam. CRYPTOPLACIDÆ, Dall.

54. **Cryptoplax striatus**, Lamarck, 1819.

*Chitonellus striatus*, Lamarck, An. S. Vert., vi., p. 317, 1819; Desh. in Lam., vii., pp. 481, 136; Sowerby, Genera of Shells, t. 139, f. 4; Conch. Illustr., f. 62; Blainville, Dict. Sc. Nat., xxxvi., p. 555, 1825; Reeve, Conch. Syst., ii., t. 135, f. 1; Conch. Icon., f. 4.

*C. gunnii*, Reeve, Conch. Icon., f. 5, 1847.

*C. rostratus*, Reeve, loc. cit., f. 6.

*C. oculus*, Reeve, loc. cit., f. 7a,b (not of Quoy and Gaimard).

*Cryptoplax striata-gunnii-rostrata*, H. and A. Adams, Gen. Rec. Moll., i., p. 484; Angas, P.Z.S., 1867, pp. 224, 225.

*Chiton (Chitonellus) striatus*, Smith, Zool. Coll. "Alert," p. 84.

*Cryptoplax striatus*, Haddon, "Challenger" Report, xv., p. 39, t. 1, f. 9; t. 3, f. 9a-9m.

*C. striatus*, Lamarck, var. *gunnii*, Reeve; Bednall, Proc. Mal. Soc., London, vol. ii., part 4, April, 1897, p. 157; Torr, Trans. Roy. Soc., S.A., 1911, p. 100.

After examination of a large number of specimens from many parts of Australia, I have satisfied myself that the

*Chitonellus striatus* of Lamarck describes our South Australian species admirably. Most of the specimens are covered with soft velvet seal-like hair, which hardens into bristles when dried. I have a few hairless specimens, but this may be accounted for by local attrition or disease. The breadth of the valves varies so much in *striatus* that there seems no room for var. *gunnii*.

*C. striatus* is found all around the coast of Australia and Tasmania. I have collected it in about twenty places on the South Australian coast from Port MacDonnell to Nuyt Archipelago. The valves in some specimens are of a rich deep salmon-pink, while others are a dark-brown. The girdle is of a nut-brown when alive, going darker as it dries. It delights in the recesses of bunches of *Serpularia*, and I have taken macerated specimens from the stomach of a schnapper. I have seen living specimens nearly a foot long. I have dried ones  $90 \times 10$  mm.

55. *Callochiton mayi*, Torr, 1912. Pl. v., figs. 1a-f.

*C. mayi*, Torr, Proc., Roy. Soc. Tasmania, 1912, p. 1.

*General Appearance*.—Shell oblong, very much elevated, strongly carinated, side slopes straight. *Colour*.—Creamy-white variegated with splashes of reddish-brown; the anterior and posterior valves are nearly always red, and this colour extends to the girdle.

*Anterior Valve*.—Red, smooth to the unaided eye, but microscopically regularly granulated and dotted all over with minute black dots which look like eyes, 14 to 16 pectinated teeth.

*Median Valve*.—*Lateral area* distinctly raised, smooth or with slight growth-lines. A broad shallow transverse sulcus in the centre of the area containing numbers of eye-dots somewhat regularly arranged. On one lateral area on one side of a valve, 61 of these eye-dots were counted.

*Pleural area* deeply longitudinally sulcated with eight to twelve grooves, extending from the margin to the dorsal area, but growing shorter towards that area.

*Dorsal area* triangular, with microscopical irregular striations running into the pleural area.

The median valves have two distinct slits.

*Posterior Valve*.—Divided into two distinct areas by a raised riblet, the posterior part being similar in colour and granulations to the anterior valve, and the upper part creamy-white with splashes of red, microscopically granulated, numerous eye-dots, mucro median. The division between the two parts of this valve is very distinct. The pleural area has the same longitudinal sulci as that of the median valve.

*Interior of Shell*—Porcelaneous, with raised riblets on posterior part of valve, sinus shallow and wavy, sutural laminae very short.

*Girdle*.—Covered with irregular appressed spinelets, coarser towards the outer margin. In curled specimens these spines are erect, creamy-white with red spashes.

*Measurement*.— $10 \times 5$  mm

*Hab.*—Dredged by Dr Verco in Spencer Gulf. One specimen was found by the writer on the north-west coast of Tasmania, and another from the same locality is in the possession of Mr. Basset Hull.

*Remarks*.—I have had considerable difficulty in determining the *genus* of this shell. It has pectinated teeth and eyes like *Tonicia*, but the girdle is not leathery, nor are the valves so polished. It may be a *Chaetopleura*. The description is repeated, as the dredged South Australian specimens differ from the account given by Dr. Torr in the Proc. Roy. Soc., Tasmania. No eye-dots can be seen in the Tasmanian specimen.

# 56. *Lepidopleurus pelagicus*, sp. nov. Pl. v., figs 2a-f.

*General Appearance*.—Ovate, decidedly arched and strongly carinated. Side slopes straight. The shell gradually tapers towards the tail valve. The valves overlap the girdle. *Colour*—Uniform, pale sulphur-yellow; the girdle has a slightly deeper shade, almost brown when dried.

*Anterior Valve*.—Broader than the median valves. It has three or four concentric grooves or growth markings parallel to the girdle, crossed by a number of minute striations converging towards the apex. The interior is pearly-white. No dentition nor sutural laminae. The posterior edge of the valve is serrated.

*Median Valve*.—The lateral area is gradually elevated above the central area. The whole of the valve is covered with minute tubercles in longitudinal rows in the dorsal and pleural areas. Under the microscope, these appear like strings of beads. The rows are transverse in the lateral areas. The sutural plates are diminutive and semi-transparent, the sinus very broad. The posterior edge of the valve is serrated. Interior pearly and semi-transparent, the striations of the tegmentum distinctly shows through.

*Posterior Valve*.—Mucro median elevated, with concave slope to girdle. Pustulose liræ converge to the mucro. Sutural plates delicately diminutive.

*Girdle*.—Leathery and spiny to the unaided eye. Under  $1\frac{1}{2}$ -in. lens it is covered with minute specules.

*Measurement*.—Dried,  $8 \times 4$  mm.

*Hab*.—Dredged by Dr. Verco from 130 fathoms off Cape Jaffa. Several valves were dredged from 300 fathoms off the south-east coast of South Australia.

*Remarks*.—In detail this shell strongly resembles *Lepidopleurus inguinatus*, but the whole shell is much more carinated and the lateral areas differ in the massing of the pustules.

57. *Ischnochiton bednalli*, sp. nov. Pl. v., figs. 3a-f.

*General Appearance*.—Elliptical, valves wide, rounded, slightly carinated, side slopes curved, cream colour uniform in valves and girdle. The posterior margins of the valves project considerably and give a verandah-like appearance. The valves are exceedingly delicate.

*Anterior Valve*.—Two or three ill-developed grooves or growth-lines parallel to the girdle crossed by about twenty microscopically pustulose liræ converging towards the apex. About twenty slits with regularly scalloped pectination between.

*Median Valve*.—Dorsal area uniform in width composed of five or six rows of pustules either worn or compressed. Pleural areas divided into five irregular diagonal rows of pustules by reticulated sulci, which gives the appearance of open network. Lateral areas distinctly raised and crossed transversely with four rows of pustulose liræ converging towards the dorsal area. Four of these pustules project from the posterior margin. Interior pearly-white. Valves project considerably. Sutural laminæ small and delicate. Sinus very wide. Diminutive slit rays under  $\frac{1}{4}$ -in. lens

*Posterior Valve*.—Mucro ante-median almost covered by the seventh valve. Concave between the mucro and the girdles. The mucro is covered with pustules, and the rest of the valve has two or three concentric rings of pustulose liræ parallel to the girdle. The pustules grow smaller towards the mucro. About twenty-six slit rays.

*Girdle*.—Covered with microscopically striated scales.

*Hab*.—Two specimens only from St. Francis Island, Nuyt Archipelago, Australian Bight.

*Measurement*.—Dried specimen,  $6 \times 3$  mm.

*Remarks*.—I have named this chiton after Mr. Bednall, the doyen of Polyplacophora work in Australia. It is an exquisite chiton, and somewhat resembles *Ischnochiton pilsbryi* and *Lepidopleurus inguinatus*.

58. **Acanthochites rufus**, *sp. nov.* Pl. vi., figs 4a-f.

*General Appearance*.—Elliptical, roundedly arched, much more so than *A. variabilis*, valves beaked, colour uniformly terra-cotta.

*Anterior Valve*.—Five very indistinct riblets, which are really waves in the pustules. The pustules are in regular lines, appearing continuous with those on the second valve.

*Median Valve*.—Covered with pustules arranged in longitudinal liræ. There is little difference between the dorsal, lateral, and pleural areas. There are about twelve rows of these pustules on the latero-pleural area divided by sulci, and about fourteen rows on what may be termed the dorsal area. The microscopic pustules in these are much smaller than those in the latero-pleural areas. There is a gradual elevation towards the posterior end of each valve, and the pustules in this lateral region are more irregular.

*Posterior Valve*.—Mucro very indistinct, post median. A deep sulcus parallel to the girdle separates it from the outer edge of the shell. Rows of pustules converge towards the mucro and appear continuous with the rows on the median valves. Nine rows on the latero-pleural areas and twelve on the dorsal areas. The mucro is almost at right angles to the girdle, and the rows of pustules are concentric below the mucro.

*Girdle*.—Leathery, very narrow in dried specimen, covered with spinelets. Five corneous spots on the girdle surrounding the anterior valve and one at each suture, very indistinct in some.

*Measurement*.— $10 \times 5$  mm

*Hab*.—One specimen only from Kangaroo Island.

*Remarks*.—The detailed description of this shell approaches *A. variabilis*, but the absence of the distinction between the dorsal and the latero-pleural areas and the marked difference in the appearance and shape of the shells when placed side by side make it necessary to place it in a new species.

The name *rufus* is given on account of its rich terra-cotta colour.

59 **Acanthochites kimberi**, *sp. nov.* Pl. vi., figs 5a-f.

*General Appearance*.—Long, narrow, tapering towards the ends. Valves rounded, beaked. *Colour*.—Either cream with splashes of dark- and light-green or, in some specimens, the green predominating over the cream with splashes of pink on some valves.

*Anterior Valve*.—Three sharply-defined riblets. Covered with rounded or oblong pustules larger at the margin and decreasing in size towards the apex. Interior pearly. Insertion plates deep, three slits.

*Median Valve*.—Dorsal area, wedge-shaped, foliated, covered with microscopic triangular pustules. Alternate black and white spots separate the dorsal from the pleural areas. Latero-pleural area, covered with irregular rounded and elliptical tubercles, small near the dorsal area, growing much larger as they approach the girdle and the posterior edge. Sinus broad, insertion plates deep, one slit on each side.

*Posterior Valve*.—Diminutive, mucro median, a distinct dorsal area similar to the median valves with irregular pustules below the mucro. Five microscopic riblets run from the mucro to the eaves. The dorsal area is concave. Articulation, bluish-green, rounded, excavated, deep insertion plates, two slits.

*Girdle*.—Leathery, covered with spinelets. Five erect silvery tufts stand out prominently around the anterior valve and one tuft at each suture. The hollows in which these tufts are placed is surrounded by a prominent ridge.

*Hab.*—Aldinga (by Mr. Kimber, after whom the shell is named), Kangaroo Island.

*Measurement*.—Dried specimen,  $10 \times 4$  mm.

*Remarks*.—I have four specimens, varying somewhat in appearance, but similar in detail.

# 60. *Ischnochiton levis*, sp. nov. Pl. vi., figs. 6a-f.

*General Appearance*.—Smooth, rounded, decidedly carinate, pale-cream colour with spots of yellow, very broad in proportion to length, valves narrow.

*Anterior Valve*.—Smooth, except for a series of concentric growth-lines, microscopically granulated.

*Median Valve*.—Regular growth-lines appear over the dorsal, lateral, and pleural areas. The lateral areas are slightly raised, the growth-lines making four very large fine longitudinal riblets. The pleural area is minutely reticulated.

*Posterior Valve*.—Mucro ante-central. Two distinct areas, dorsal and pleural, consisting of microscopic regular granulations. The rest of the valve is smooth, almost flat, with two or three concentric lines. Eight or nine irregular slits.

*Girdle*.—Covered with rounded scales, microscopically striated.

*Measurement*.— $12 \times 6$  mm.

*Hab.*—Edinburgh (Mr. Matthews).

*Remarks.*—This belongs to the smooth variety of *Ischnochitonida*. It resembles *I. wilsoni*, but its surface is not so granular. My one specimen is damaged. The name *levis* is given on account of its smoothness.

61. ***Acanthochites rubrostratus*, sp. nov.**

Pl. vii, figs. 7a-f.

*General Appearance.*—Shell elliptical, broad, girdle wider than the valve. Tegmentum cream-coloured, dorsal areas bright-green tipped with rosy-pink, which gives it its name.

*Anterior Valve.*—Three to five distinct pustulose riblets with probably five slits. My dissected specimen was damaged. In one co-type the pustulated riblet becomes one elongated pustule. The tegmentum is covered with flattened pustules.

*Median Valve.*—The lateral area is separated from the pleural area by a rib covered with pustules. The lateral and pleural areas are covered with nine rows of rounded appressed pustules, somewhat regular, converging towards the apex. The dorsal area is narrow, corneous, showing growth-lines, no striae, somewhat foliated, one slit.

*Posterior Valve.*—Mucro posterior with rows of pustules between it and the girdle, to which it is at right angles. A dorsal area is seen which is almost smooth with irregular pustules on the sides. The interior is pearly, deeply hollowed, five slits, insertion plates large.

*Girdle.*—Leathery covered with minute spinelets, having long silky tufts at the sutures and five tufts around the anterior valve. In a spirit specimen the girdle is as wide as the valves.

*Measurement.*—Dried specimen, 11 × 6 mm.

*Hab.*—Two specimens from St. Francis Island and one collected by Mr. Baker at Henley Beach.

*Remarks.*—Somewhat resembles *A. speciosus*, but the girdle is very much smaller and is not continued between the valves. The *Acantho* tufts are also much more decided than in *speciosus*.

62. ***Ischnochiton bakeri*, sp. nov.** Pl. vii., figs. 8a, b, c, f

*General Appearance.*—Shell almost round, valves narrow, flattened, colour greyish-white mottled with brown.

*Anterior Valve.*—Covered with microscopic imbricating pustules, closely packed, resembling girdle scales.



*Median Valve*.—Dorsal area, triangular, smooth, spotted. Lateral areas distinctly raised with four or five irregular pustules. Median valves covered with microscopic granules.

*Posterior Valve* is missing.

*Girdle*.—Covered with imbricating striated scales. The outer edge of the girdle is fringed with delicate specules.

*Measurement*.— $4 \times 3$  mm.

*Hab*.—Henley Beach (Mr. Baker).

*Remarks*.—Strongly resembles a juvenile *Loricella angasi*, but its striated girdle-scales distinguish it. I have much pleasure in naming it after its discoverer.

#### EXPLANATION OF PLATES.

- a*—Dorsal view of entire shell.
- b*—Anterior valve.
- c*—Median valve.
- d*—Posterior valve.
- e*—Lateral view of posterior valve.
- f*—Portion of girdle magnified.

The sizes of type specimens are marked in each case.

#### PLATE V.

- 1a, b, c, d, e, f*—*Callochiton, mayi*, Torr.
- 2a, b, c, d, e, f*—*Lepidopleurus pelagicus*, sp. nov.
- 3a, b, c, d, e, f*—*Ischnochiton bednalli*, sp. nov.

#### PLATE VI.

- 4a, b, c, d, e, f*—*Acanthochiton rufus*, sp. nov.
- 5a, b, c, d, e, f*—*Acanthochiton kimberi*, sp. nov.
- 6a, b, c, d, e, f*—*Ischnochiton levis*, sp. nov.

#### PLATE VII.

- 7a, b, c, d, e, f*—*Acanthochites rubrostratus*, sp. nov.
- 8a, b, c, d, e, f*—*Acanthochites bakeri*, sp. nov.

## ADDITIONS TO THE FLORA OF SOUTH AUSTRALIA.

By J. M. BLACK.

[Read October 10, 1912.]

## PLATE VIII.

This list includes a record of some alien plants which have been recently found growing wild in our State, and the description of two new species—an *Acacia* and a *Goodenia*—collected near Tarcoola in June of this year by Mr. J. W. Mellor during his ornithological visit to that district. The introduced plants are distinguished by an asterisk.

CRUCIFERÆ.—\**Eruca sativa*, Lamk. (salad rocket). Received from several parts of the State as a weed in lucerne.—Mediterranean region.

LEGUMINOSÆ.—*Acacia tarculensis*, sp. nova. Frutex, ramulis resinoso-angulatis minute puberulis, phyllodiis oblongo-lanceolatis vel oblongis coriaceis 25-50 mm. longis arcte multinerviis (sæpe nervis 3 evidentioribus) lineâ resinosa crenulatâ decurrente marginatis plerumque acumine recurvo terminatis, junioribus appresse albo-pubescentibus, floribus pentameris, spicis axillaribus patulis laxis brevissime pedunculatis sæpius geminatis phyllodio circiter dimidio brevioribus, spicæ rhachi canotomentosa, calyce  $1\frac{1}{2}$  mm. longo pubescente lobis obtusis tubo longioribus, petalis usque supra medium connatis calyce vix duplo longioribus, bracteis concavis cum acumine inflexo, ovario pubescente, legumine immaturo sericeo, seminibus transversis.

Tarcoola (J. W. Mellor, June, 1912). Belongs to Bentham's series viii., *Juliflora*, subseries D, *Falcata*. Differs from *A. kempeana*, F. v. M., in the angular branchlets and smaller leaves with resinous margins and relatively shorter corolla; from *A. resinomarginea*, W. V. Fitzg., in the broader and shorter leaves, downy branchlets, peduncles and young leaves; from both in the long calyx-lobes and twin flower-spikes. The unripe pods (15-23 mm. long) are on specimens gathered in the Gawler Ranges in September by Captain A. S. White. (Plate viii.)

COMPOSITÆ.—*Helipterum pterochaetum*, Benth. Specimens in J. W. Mellor's collection from Tarcoola have 2-3 outer female flowers and about 14 bisexual flowers in each head. Bentham (Fl. Aust., iii., 648) says: "Florets 15-20, all apparently hermaphrodite." *Helichrysum cinereum*, F.

v. M. The specimens from Tarcoola are noteworthy, as this has hitherto been considered only a coastal shrub. The Tarcoola specimens agree exactly with those from Port Elliot. \**Tanacetum boreale*, Fischer. Glen Osmond and Green Hill Roads (H. H. D. Griffith). Inadvertently named *T. huronense*, Fischer, in *Nat. Fl. of S.A.*, 83.—Russia and Siberia.

GOODENIACEÆ.—*Goodenia modesta*, sp. nova. Herba glabrescens humilis, caule tenui rigidulo 20-25 cm. alto, foliis radicalibus longe petiolatis ovatis vel lanceolatis integris vel basi paucidentatis, caulinis, integris brevioribus, pedunculis axillaribus solitariis unifloris bibracteolatis, axillis lanatis, bracteolis grandibus foliaceis pedicellum articulatum superantibus, calyce pubescente lobis lineari-lanceolatis, corollâ flavâ saccatâ 12-14 mm. longâ extus puberulâ lobis superioribus inæqualiter alatis, indusio ciliato, stylo piloso, ovarii septo fere ejus apicem attingente, ovulis numerosis dense sub-4-seriatis.

Tarcoola (J. W. Mellor). Belongs to Bentham's section iii., *Amphichila*, but differs from any of the described species in the inflorescence and the large bracteoles. (Plate viii.)

GENTIANACEÆ. — \**Microcala quadrangularis*, Griseb. Roadsides near Knightsbridge (Adelaide).—A dwarf yellow-flowered annual from California and extra-tropical South America.

SCROPHULARIACEÆ.—\**Bartsia viscosa*, L. Established at Myponga (H. H. D. Griffith).—Mediterranean region and northwards to England. *Veronica arvensis*, L. (wall speedwell). Near Adelaide.—Europe and Western Asia.

CHENOPODIACEÆ.—\**Chenopodium opulifolium*, Schrad. Sandy land near Henley Beach.—Mediterranean region.

MYOPORACEÆ.—\**Eremophila subfloccosa*, Benth. Coorabie (Australian Bight). Sent by secretary local branch of Agricultural Bureau. Hitherto recorded only for Western Australia. Corolla greenish.

GRAMINEÆ. \**Eragrostis minor*, Host. Along Broken Hill railway and from as far north as Alice Springs.—Southern Europe and Western Asia. \**Hordeum maritimum*, With. (sea barley), has been found growing as far inland as Nuriootpa.

#### DESCRIPTION OF PLATE No. VIII.

*Acacia tarculensis*, sp. nova. 1, flower and two bracts; 2, pistil; 3, calyx spread open.

*Goodenia modesta*, sp. nov. 1, corolla spread open; 2, one face of placenta, with ovules in about 4 rows; 3, style and indusium; 4, vertical section of unripe capsule: a, a, calyxlobes; b, pouch of corolla-tube; c, articulation of pedicel.

**NOTES ON SOME OCCURRENCES OF SILICA NEAR  
MOUNT PAINTER, FLINDERS RANGES.**

By A. C. BROUGHTON.

[Read October 10, 1912]

The locality from which the examples referred to were obtained is situated in the Far North-Eastern portion of South Australia, the north-easterly termination of the Flinders Ranges.

The specimens were collected from an area occupying about 24 square miles, extending from the divide of the ranges near Mount Pitt, 12 miles across the eastern slopes, to Parallana, on the edge of the great eastern plain.

The country rocks of the area examined have been determined as Pre-Cambrian by Dr. Mawson. They consist of granites, gneiss, schists, altered porphyries, and a felspathic and siliceous rock having the features of an eutectic mixture. The area has abundant evidence of having been subjected to great earth movements, as indicated by great crushed zones, faults, and slicken-sided faces exposed on excavating.

These fissures and crushed belts permitted the easy circulation of highly mineralized waters rich in silica and iron. The waters were evidently hot and from deep-seated sources. The final traces of such activity are probably to be found today at the hot springs at Parallana.

This water, travelling along the cracks and faults, deposited its mineral contents, cementing the crushed fragments into a solid whole. It is with some of the results of this cementation and deposition from solution that the paper deals.

These belts of iron-and-quartz-cemented zones have a greater resistance to the action of the weather than the more alkaline felspathic country rock, and their outcrops, with the crystal-lined cavities and caves, are a feature of the country.

The greater part of the cementing material consists of iron and quartz. The iron mineral being either specular and micaceous hæmatite, a porous ironstone, or a very massive tough iron rock. The quartz is either distributed irregularly throughout or else lining cavities.

Along Radium Ridge there are small aggregates of amethyst in the centre of a large mass of dense ironstone; cavities, lined with beautifully developed crystals of ordinary

colourless quartz, amethyst, and black quartz, often covered with a film of brilliantly green flashes of the radio-active mineral torbernite; in other places there are small quartz-lined cavities completely filled with a brilliant canary-yellow powder, which is another radio-active uranium mineral. Some of the quartz crystals have radiating fibres of the radio-active mineral, uranophane, passing through them.

Walking along the Ridge one can notice growths of quartz sticking out from the ground up to 3 ft. in height, and broken pieces lying around. Their shape at once suggests the stalactites in caves. On closer inspection they are found to have a hollow rectangular cavity passing up the centre, the length of the growth, and that the quartz has a radiating structure away from this hollow, suggesting it has grown outward from a nucleus which has since disappeared. This type of quartz was traced over an area of at least four square miles.

In places the loose rubble and soil can be scraped away, disclosing a cavity, the top of which has been worn off by erosion, with these growths pointing centrewards from all around. In other places are fissures in the country rock lined with this type of quartz formation.

In the solid rock, some feet from the surface and where atmospheric weathering has not penetrated, there are found masses of quartz with these long rectangular cavities filled with a powdery substance like clay. Probably at greater depth the original nucleus would be found in an unaltered state.

Beautifully coloured crystals tinted with various shades of red, brown, pink, and yellow may be collected at various places along the Ridge; also bunched aggregates and tabular masses.

Continuing in an easterly direction, pieces of quartz occur with a warty formation on the upper-surface and irregular sharp-edged rectangular protrusions on the lower, as if it had been formed in a mould produced by the cracking of rocks.

In some of the caves there occur small stalactites of silica hanging from the tops and projecting from the sides, and streaky formations on some of the rock faces, as if the silica-bearing waters deposited some of their load while slowly trickling along.

The Ridge takes a sudden turn to the south about three miles from its westerly end, and continues for about a mile, where it terminates in Mount Gee, or Crystal Mount, which is of considerable interest. Outcrops and cliffs, of jasper (up to 50 ft. high) and ironstone and quartz, with great

boulders of the same materials scattered around its flanks, are features of this part of the Ridge.

Numbers of crystal-lined cavities and caves are found in the quartz and ironstone outcrops. At the very top of Mount Gee is a small cave lined with what at first sight appears to be mud-covered quartz crystals. On breaking them, however, one is astonished at an unexpected snow-whiteness and purple in banded layers. An outcrop of similar quartz is found on the opposite side of Mount Gee; so, presumably, this formation passes through the top of the mountain. Banded quartz of various designs and structures are to be found here. Some are simply alternating layers of coloured quartz, generally pinks, whites, and yellows; others have iron layers alternating with the quartz; while again, some have the quartz and iron indiscriminately mixed. Much of the quartz has a delicate fibrous structure, at right angles to the layers in some cases, and radiating from centres in others, giving it a satin-like appearance. This fibrous structure is due to actual quartz material and not inclusions, as evidenced by breaking it, when the quartz splinters into long needle-like fragments.

Carnelian is often met with in bands passing around and through masses of quartz which have a well-defined crystal formation. On breaking, the common white quartz splits up into the individual crystals, and the carnelian may be obtained in small irregular fragments.

Quartz pseudomorphs after fluorspar occur here, as well as pseudomorphs after other minerals.

A common feature noticed was the alternate depositions of silica, both in individual crystals and large deposits, as indicated by a cap-in-cap formation. In places the complete upper part of a quartz crystal could be removed and yet have a regularly developed crystal underneath, with the six pyramid faces and their proper interfacial angles.

It was possible to do this on account of a drusy set of faces being covered with more silica not in optical continuity with the older quartz. Such an effect may occur several times in a single crystal. In some examples collected a layer of clay, oxide of iron as a thin film, or a layer of hæmatite up to  $\frac{1}{4}$  in. thick, separated layers of silica which could be so removed. Quartz covered with hæmatite, which in turn was covered with more quartz with a different structure from the lower silica, was commonly met with.

This alternating feature gives rise to some beautiful examples of coloured quartz crystals. In some examples collected, four different colours, in layers conformable with the exterior of the crystal, occurred. The common colours met

with in such cases are blacks, pinks, reds, yellows, greens, browns, and the whites of milky quartz.

Inclusions, both solid and liquid, are frequent. Some layers, richer in inclusions than others, occur in the same crystal. It is also possible to find different layers with different types of inclusions. Thus in one layer you may find small dark specks of iron, the next may have liquid inclusions or perhaps not any, and the next layer may be rich in coloured particles giving a distinct colour to the layer.

Some fine examples of milky quartz, alternating with the transparent glassy variety, perhaps in six or eight alternating layers in the same crystal, are found lying about on the slopes of the mountain.

Another novel feature is the way most of the quartz breaks up on hitting. The individual crystals separate out with the pyramid termination at one end and a sharp point at the other which commences from the base of the pyramid faces, such pieces reminding one of single teeth of some animals. Many of the pyramid faces have warted developments on them. Some crystal faces are completely covered with these rough nodular elevations.

Continuing easterly, along Radium Ridge, instead of turning south to Mount Gee, we come to a creek on the remote side of which Mount Painter is situated.

This mountain, which is roughly four miles around the base and 1,000 ft. at its highest point above the creek, consists almost entirely of the crushed and ironstone rocks. Stiff climbing over boulder and rock-strewn flanks and up steep cliff faces and scrambling over scree, reveals on a grand scale the excessive crushing, with subsequent cementation, that the area has been subjected to. Great caves and hollows, weathered out of the less-resisting material of some of the cliffs, reveal great faces of country rock and crushed zones with the bands and cavities of quartz of different varieties. At the very summit of the mountain a band of amethystine quartz runs through the ironstone rock. The two highest points of the mountain are outcrops of ironstone-cemented crushed zones.

Many varieties of quartz are to be met with on the flanks and lower hills of this mountain; for example, sardonyx, amethystine-quartz, jasper, chalcedony, coloured quartz crystals, quartz formations of various shapes, and all more or less coloured.

Passing north-easterly from Mount Painter we traverse some four miles of granite country, all more or less intersected with the iron-and-quartz-cemented zones, and it is

worth noting that nearly all of them carry the radioactive minerals, autunite or torbernite, in isolated patches. Several miles of quartzites and schistose rocks are then encountered: the schists are copper-bearing in places.

Approaching the foot hills of the eastern flanks of the ranges highly siliceous rocks are again encountered, and seams of beautifully-coloured opaque quartz crystals are found intersecting the country rock. Fine examples of chalcedony and jasper occur. It is here that the present hot springs occur. The water is not boiling, but the hand cannot be held in it a moment. Sufficient water is ejected to flow along the boulder-and-gravel-strewn creek for about half a mile. Mounds of gypsum occur at the commencement of the great plain, which extends towards Queensland and New South Wales, about two miles from these springs, such mounds suggesting the recent activity of other springs. The whole locality is rich in seams of chalcedony, of which some fine examples were collected.



DESCRIPTIONS OF WILD HYBRIDS OF AUSTRALIAN DUCKS  
CONTAINED IN THE S.A. MUSEUM COLLECTION.

By F. R. ZIETZ, Ornithologist of the South Australian  
Museum.

[Read October 10, 1912.]

PLATE IX.

The following are descriptions of six interesting specimens of ducks which are, without doubt, hybrids bred in the wild state; they were shot, associated with other wild ducks, on Lakes Alexandrina and Albert, of the lower Murray. Specimens referred to as A, B, C, and D show characters of both *Anas superciliosa*, Gm., and *Nettion gibberifrons*, S. Müll.; specimen E, those of the former and *Spatula rhynchotis*, Lath., female; and specimen F, those of *Nettion gibberifrons* and *Spatula rhynchotis*, female.

A.—General plumage above dark-brown, the feathers broadly margined with greyish and rufous buff; upper part of the head and a band from the forehead through the eyes to the occiput brown-black, each feather narrowly edged with buff; superciliary stripe, cheeks and sides of neck buffy-white minutely streaked with brown; a band of buff feathers streaked with brown runs from the gape to the ear-coverts; chin and throat white immaculate; feathers of the breast with a blackish-brown crescentic band broadly edged with fulvous, those in the centre of the breast tipped with white, forming a silvery-white patch; feathers of the abdomen brown broadly edged with buff; sides of body and upper and under tail-coverts darker; wings brown, speculum on secondaries metallic-green, bordered anteriorly by a black band with a narrow buffy-white edging at the tips of the greater wing-coverts, and similarly posteriorly by another but broader black band with a broader white edging at the tips of the secondaries; wing-coverts dark greyish-brown with an olive lustre and light edges; the greater row brown with a sub-terminal black band and tipped with buffy-white; the greater under wing-coverts grey on the outer webs and nearly the whole of their inner webs white; the lesser ones white with a brown spot at the base; axillaries white; upper and lower mandibles bluish-black, nail black; legs and feet plumbeous with a yellowish tint, claws black. Wing, 9; tail, 4; culmen, 1.7; tarsus, 1.5; sex, (?). Locality: Lake Albert, South Australia, February 12, 1910. Plate ix., fig. 4.

B.—Differs from A in having the sides of head, neck, and throat pale-buff, deeper fulvous on the breast; the feathers of the lower breast and abdomen tipped with white, giving those parts a silvery wash; wing speculum coppery-green; basal half of lower mandible brown, the remainder yellow, with a few small brown spots. Wing, 9.5; tail, 4; culmen, 1.85; tarsus, 1.6; sex, (?). Locality: Lake Albert, South Australia.

C.—Differs from A in having the sides of head, throat, and the whole of the under-surface washed with ochreous-yellow; the feathers of the breast margined with bright ochreous-brown; lower mandible plumbeous with a small yellow spot near apex. Wing, 9.35; tail, 4; culmen, 1.7; tarsus, 1.5; sex, (?). Locality: Meningie, Lake Albert, South Australia, July 30, 1908.

D.—This specimen is much smaller than the three preceding ones, being about the size of *Nettion gibberifrons*, and also agreeing with that species in general colouration and markings with the following exceptions:—Facial markings similar to those of A; a white spot on each side of the head at the base of the upper mandible; greater wing-coverts not white, but olive with faint black subterminal band and broadly tipped with reddish-buff; greater under wing-coverts greyish-brown broadly edged with white on their inner webs, the lesser ones white with a brown spot at the base. Wing, 8; tail, 3.5; culmen, 1.65; tarsus, 1.45; sex, female. Locality: Lake Alexandrina, South Australia, May 16, 1895.

E.—Crown of head, facial markings, and throat similar to those of *Anas superciliosa*, the sides of the neck are more distinctly freckled, and the feathers of the under parts brown with broad reddish edges, as in the female of *Spatula rhynchotis*; upper parts brown with greenish reflections, each feather edged with buffy-grey; the scapularies brown, lighter along the shaft-line and richly glossed with green; upper wing-coverts dull-blue, those near the margin of the wing narrowly edged with white; the greater row brown with greenish reflections, having a subterminal black band glossed with metallic-green and broadly tipped with white; wing speculum on the secondaries metallic-green, each feather having a subterminal black band narrowly edged with white at the tip; the two outer tertials of each wing are brown with a broad velvety-black margin on their outer webs glossed with green; under wing-coverts white, some of the greater ones tipped with grey; axillaries white; primaries and tail-feathers brown, glossed with olive, the latter and also the rump and upper tail-coverts narrowly margined with reddish-

buff; bill black, slightly spatulate, lower mandible brown, the nail clouded with yellow; lamellæ of upper mandible more developed than in *Anas superciliosa* and slightly projecting beyond the lower margin of the bill; irides yellowish-brown; legs and feet orange. Wing, 10·25; tail, 3·65; culmen, 2·3; tarsus, 1·75; width of bill at base ·75, at apex 1; sex, male. Locality: Lake Albert, South Australia, January 16, 1899. Plate ix., fig 5.

F.—In general colouration and markings this bird agrees with *Nettion gibberifrons*, but in other respects, as noted, it shows characters which approach those of the female of *Spatula rhynchotis*. The feathers of the forehead, cheeks, and sides of neck are tinged with buff, and their brown shaft-streak is more pronounced, the scapularies and tertials are more acuminate and show greenish reflections, the upper wing-coverts are brown with bluish-grey margins; the under wing-coverts white, the marginal ones brown edged with white; the greater row silvery-grey; four secondaries metallic-green on their outer webs, the remainder olive with a greenish lustre; bill spatulate, width at base ·57, greatest width at apical end ·8; upper mandible yellowish-brown; lower mandible yellow; lamellæ of upper mandible well developed and projecting below to its lower margin; legs and feet orange. Wing, 7·75; tail, 4; culmen, 1·75; tarsus, 1·35; sex, female. Locality: Lake Alexandrina, April 11, 1895. Plate ix., fig. 6.

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#### EXPLANATION OF PLATE IX.

- Fig. 1.—*Anas superciliosa*.  
 .. 2.—*Nettion gibberifrons*.  
 .. 3.—*Spatula rhynchotis*, female.  
 .. 4.—*Anas superciliosa* × *Nettion gibberifrons*. Hybrid.  
 .. 5.—*Anas superciliosa* × *Spatula rhynchotis*. Hybrid.  
 .. 6.—*Nettion gibberifrons* × *Spatula rhynchotis*. Hybrid.
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NOTES ON SOUTH AUSTRALIAN MARINE MOLLUSCA,  
WITH DESCRIPTIONS OF NEW SPECIES.—PART XV.

By JOS. C. VERCO, M.D. (Lond.), F.R.C.S. (Eng.).

[Read October 10, 1912.]

PLATES XV. AND XVI.

This paper is a continuation of the series from page 215 of vol. xxxv. of 1911, and embraces all the known South Australian species of *Helcioniscus*, *Patella*, *Nacella*, *Acmaea*, *Phenacolepas*, *Haliotis*, *Scissurella*, and *Schismope*. It discusses also several species which have been attributed to South Australia, but are not recognized as occurring here.

*Helcioniscus tramosericus*, Martyn.

*Patella tramoserica*, Martyn, Univ. Conch., t. 16, *P. (Helcioniscus) tramoserica*, Martyn, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 205.

*Helcioniscus diemenensis*, Philippi, Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1908, vol. xxi. (New Series), part 1, p. 282.

Gatliff and Gabriel discarded the name *P. tramoserica*, Martyn, because the type locality was North America, and no Victorian specimen was exactly like his figure; but in answer to enquiries by Mr. Gabriel, Dall has since written that Martyn's species does not occur on the coasts of America, and that it is probably Australian or New Zealand. Very likely Martyn obtained it from Australia, but by mistake gave it an American habitat.

It occurs all along the South Australian coast from the east as far towards the west as Venus Bay. At St. Francis Island it is very rare and small, up to 18 mm.; so it seems to fade out along our west coast. It was not taken at any place along the south or west coast of Western Australia, its place being taken by *Patella neglecta*.

*Helcioniscus illibratus*, Verco.

*Helcioniscus illibratus*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 205, pl. x., figs. 6-14: *Type locality*—Spencer Gulf; Hedley, Commonwealth of Australia, Fisheries, part 1, 1911, p. 93, "100 fathoms, 40 miles south of Cape Wiles, South Australia."

Dredged in 15 to 20 fathoms off St. Francis Island, 5 dead. Taken in Western Australia, as far round as Rottnest Island.

**Helcioniscus limbatus, Philippi.**

*Patella limbata*, Philippi, Abbild und Besch, Conch., vol. iii., p. 71; (*Helcioniscus*) Verco, Trans. Roy. Soc., S.A., 1907, vol. xxxi., p. 100.

It is very common, large, and beautiful in St. Francis Island, where *H. tramosericus*, Martyn, is very rare and small. I did not take it anywhere in Western Australia. Mr. Hedley in "The Marine Fauna of Queensland," in the Australasian Association for the Advancement of Science, 1909, p. 355, does not include either of these species, nor in his Addendum, p. 809. It would seem, therefore, to be restricted to Tasmania and the southern shore of Australia.

**Patella ustulata, Reeve.**

*Patella ustulata*, Reeve, Conch. Icon., 1855, vol. viii., pl. xxxi., figs. 88a, 88b; Verco, Trans. Roy. Soc., S.A., vol. xxx., 1906, p. 206, and vol. xxxi., p. 99.

Taken at Venus Bay, and many at St. Francis Island, up to 32 mm. long by 26 mm. broad.

**Patella aculeata, Reeve.**

*Patella aculeata*, Reeve, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 207.

Taken alive on the rocks on St. Francis Island up to 36 mm. by 26 mm., so that as far west as this the size is maintained.

**Patella stellæformis, Reeve**

*Patella stellæformis*, Reeve, Conch. Systematica, 1842, vol. ii., p. 15, pl. cxxxvi., fig. 3; Pilsbry, Man. Conch., vol. xiii., 1891, p. 98, pl. xvii., figs. 25-27, pl. lvi., figs. 62-65; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., part 3, p. 410.

*Patella pentagona*, Reeve, Conch. Icon., 1854, pl. xx., figs. 48a, 48b, 48c (non Born Mus. Test. Vindobonensis).

Var. *Patella chapmani*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1876 (1875), p. 157; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 208.

Var. *Acmæa alba*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1877 (1876), pp. 155, 156; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 208.

I think Tate and May were right in regarding *P. chapmani*, Tenison-Woods, as conspecific with *P. stellæformis*, Reeve; but the two types are so unlike that the former may well be regarded as a good variety of the latter.

Taken at Rosetta Head, Encounter Bay (Tate), Tyringa Beach, Venus Bay, numerous and foliaceous but small, and Fowler Bay on the west coast; and on St. Francis Island up to 27 mm. by 20 mm. by 7.5 mm.

The species is rare and rather small on the South Australian coast, both the typical and the variant form, and it is only when we get west as far as St. Francis Island that we find it of fair size and in good variety. Here we take both the craggy typical shell and the extreme variant (*Acmaea alba*).

### ***Nacella parva*, Angas.**

*Nacella parva*, Angas, Proc. Zool. Soc., 1878, p. 862, pl. liv., fig. 12; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 208, and 1907, vol. xxxi., p. 101.

Taken on the beach at Sceales Bay, and at St. Francis Island in 6 fathoms, and in 15 to 20 fathoms, many and in good condition, with the axial line of dorsal spots of a delicate blue colour; in 35 fathoms, 2 much more depressed than those from shallower waters.

### ***Nacella crebrestriata*, Verco.**

*Nacella crebrestriata*, Verco, Trans. Roy. Soc., S.A., 1904, vol. xxviii., p. 144, pl. xxvi., figs. 20, 21; 1906, vol. xxx., p. 208; and 1907, vol. xxxi., p. 101.

Dredged in 55 fathoms off Cape Borda, 1; taken on the beach at Venus and Sceales Bays, Port Sinclair, and St. Francis Island.

#### **Var. *roseoradiata*, Verco.**

Was taken at Guichen Bay and St. Francis Island.

### ***Nacella stowæ*, Verco.**

*Nacella stowæ*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 209, pl. x., figs. 4, 5, and 1907, vol. xxxi., p. 101; Gatliff, Proc. Roy. Soc., Victoria, 1907, vol. xx. (New Series), part 1, p. 34, recorded for Victoria.

Kingston Beach, many; St. Francis Island beach, 4 good.

### ***Acmaea alticostata*, Angas.**

*Patella alticostata*, Angas, Proc. Zool. Soc., London, 1865, p. 56, pl. ii., fig. 11; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 209.

Taken at Venus Bay and Port Sinclair, also on St. Francis Island, abundant, typical, good condition, and in considerable variety. *Radula*, pl. xvi., figs. 3, 4.

### ***Acmaea flammea*, Quoy and Gaimard.**

*Patelloidea flammea*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 354, pl. lxxi., figs. 15, 16; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 212.

A form like the type, which I have from the Derwent estuary, the type locality, has not been found by me in South

Australia. It is questionable whether this is really conspecific with *A. jacksoniensis*, Reeve, and *A. crucis*, Tenison-Woods.

*Var. A. jacksoniensis*, Reeve (*Patella*), Conch. Icon, vol. viii., 1855, pl. xxxix., figs. 127a and 127b.

*Var. A. gealei*, Angas (*Patella*), Proc. Zool. Soc., London, 1865, p. 57.

*Var. A. crucis*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1877 (1876), p. 52.

Taken at Venus and Streaky Bays and St. Francis Island, many and various, with or without the cross.

### ***Acmaea calamus*, Crosse and Fischer.**

*Patella calamus*, Crosse and Fischer, Journ. de Conch., 1864, p. 348, and 1865, p. 42, pl. iii., figs. 7, 8; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 211.

Sceales Bay, West Coast.

*Var. polyactina*, *nov. var.* Pl. xv., figs. 1, 2.

This is a colour variety. It has the shape of *A. calamus*, C. and F., though sometimes narrower in front, and has the fine radial sculpture. It may reach 21 mm. long by 17 mm. broad and 7 mm. high, but it has brown rays gradually widening, generally seven, the odd one in the posterior centre; but there may be six, or as many as fourteen, by secondary intercalation. They may be broken up into blotches or specks, and may tend to be united by reticulating spots and lines. The shell is sometimes polyangulate as well as rayed. They grade into typical *A. calamus*, Crosse and Fischer.

Gulf St. Vincent, Sceales Bay, Wallaroo Bay 15 fathoms.

### ***Acmaea septiformis*, Quoy and Gaimard.**

*Patelloida septiformis*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 362, pl. lxxi., figs. 43, 44; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 215.

"Quoy gave it the name of '*septiformis*,' because in colour it resembles the *Navicella*, called by some authors '*Septaires*.'" —Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), 1836, vol. vii., p. 550.

Port Elliston, many, large, flat, and eroded; Streaky Bay, many and large; St. Francis Island, few and small.

### ***Acmaea marmorata*, Tenison-Woods.**

*Acmaea marmorata*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1876 (1875), pp. 156, 157; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 210.

It was taken at Venus and Streaky Bays, St. Francis Island, and Point Sinclair, along the west coast of South Australia. At Streaky Bay it may be 26 mm. long and at St.

Francis Island 19 mm. I did not find any examples anywhere in Western Australia, so that it would seem to disappear somewhere between St. Francis Island and Esperance. The examples from New South Wales and Queensland sent to me are much smaller than those taken at Guichen and Streaky Bays, which may be regarded as the metropolis of the species.

### ***Acmæa subundulata*, Angas.**

*Acmæa subundulata*, Angas, Proc. Zool. Soc., London, 1865, p. 155; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 214.

I took it alive in Streaky Bay in considerable numbers in very shallow water at low tide on wood and bottles and other shells, also at Murat Bay and on St. Francis Island, and at Esperance Bay, Western Australia.

### ***Phenacolepas calva*, Verco.**

*Scutellina calva*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 217, pl. viii., figs. 9, 10; Hedley and May, Records Austr. Mus., 1908, vol. vii., No. 2, p. 110, "100 fathoms, off Cape Pillar, Tasmania"; Hedley, Commonwealth of Australia, Fisheries, part 1, 1911, p. 93, "100 fathoms, 40 miles south of Cape Wiles, South Australia."

Dredged in 200 fathoms off Beachport, 3.

### ***Phenacolepas alboradiata*, Verco.**

*Scutellina alboradiata*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 217, pl. viii., figs. 1, 2.

Gulf St. Vincent, depth unrecorded, 4; Salt Bay Creek, Edithburgh; 110 fathoms off Beachport.

### ***Haliotis albicans*, Quoy and Gaimard.**

*Haliotis albicante*, Quoy and Gaimard, Voy. "Astrolabe," 1834, Zool., vol. iii., p. 311, pl. lxxviii., figs. 1, 2. *Type locality*—"King George Sound, upon rocks at the entrance."

*Haliotis albicans*, Quoy and Gaimard, Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), 1843, vol. ix., p. 31, sp. 16; Reeve, Conch. Icon., 1846, vol. iii., pl. x., fig. 30; Philippi, Abbild. Besch. Conch., 1846, vol. ii., p. 69, pl. iv., figs. 1a and 1b; Angas, Proc. Zool. Soc., London, 1865, p. 183, recorded for South Australia; Sowerby, Thes. Conch., 1882, vol. v., p. 30, sp. 57, pl. iii. (430), fig. 20; Weinkauff, Conch. Cab. (Ed. Küster), Band. vi., Abt. 1.B., 1883, p. 71, pl. xxi., fig. 6, pl. xxviii., fig. 2; Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 78, pl. v., fig. 27; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 407, Tasmania; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1903, vol. xv. (New Series), part 2, p. 178, Victoria.

Taken all along coast of South Australia from Glenelg River to St. Francis Island.



Quoy used the specific name "*albicante*," which is grammatically correct, as *hous*, *hotis* is a neuter noun.

Lamarck and Sowerby give New Zealand as the habitat, but Hutton does not record it in his Manual of the New Zealand Mollusca, 1880, so it is probably a mistake.

In Adcock's Handlist of the Aquatic Mollusca of South Australia, 1893, p. 9, No. 366, it was given as *H. glabra*, Chemnitz, with *albicans*, Quoy and Gaimard, as its synonym.

### ***Haliotis elegans*, Koch.**

*Haliotis elegans*, Koch, in Philippi, Abbild. und Besch. Conch., 1844, vol. i., p. 119, pl. i., figs. 1, 2; Reeve, Conch. Icon., 1846, pl. vii., fig. 21; Sowerby, Thes. Conch., 1882, vol. v., p. 27, Sp. 44, pl. xi. (438), fig. 82, and pl. xiv. (440 bis.), fig. 119; Weinkauff, Conch. Cab. (Ed. Küster), 1883, Band. vi., Abt. 1.B., p. 51, Sp. 39, pl. xx., figs. 2, 4; Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 103, pl. xiii., fig. 70; Adcock, Handlist, etc., 1893, p. 9, No. 370.

Koch gives as the type locality "the western shore of New Holland," but Reeve and all who follow give "Port Adelaide," including Pilsbry, who says he has not seen the species. Koch correctly says it is "very rare" and gives its proper *habitat*. But it has not been found at Port Adelaide nor anywhere along the southern coast of Australia to my knowledge. It occurs on the western shore of Australia. Swainson, in Proc. Roy. Soc., Tasmania, 1855, p. 51, writes:—"I have seen but two specimens, in the collection of my friend G. W. Walker, who thinks he procured it on some island in Bass Straits." Probably, however, Mr. Walker made a mistake.

### ***Haliotis nævosa*, Martyn.**

*Haliotis nævosa*, Martyn, Univ. Conch., 1784, vol. ii., f. 63, reproduced in Chenu's Bibliothèque Conch., Ser. 1, Tome ii., 1845, p. 23, No. 63, pl. xxii., fig. 1; Cab. Jno. Hunter, Hab. Nouv. Galles du Sud; Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), vol. ix., 1843, p. 34, No. 20, *hab.* New Zealand; Reeve, Conch. Icon., vol. iii., pl. viii., fig. 27a, pl. ix., figs. b, c; 1865, Angas, Proc. Zool. Soc., London, p. 183, No. 178, *hab.* South Australia, and 1867, p. 218, No. 203, *hab.* New South Wales; Sowerby, Thes. Conch., vol. v., 1882, p. 31, No. 59, pl. x. (437), fig. 73, *hab.* New Zealand, Van Diemen Land, and Philippines; Weinkauff, Conch. Cab. (Ed. Küster), Band. vi., Abt. 1.B., 1883, p. 34, No. 25, pl. xiv., figs. 1-3; Watson, "Chall." Zool., 1886, vol. xv., p. 49, No. 1; 1890, Pilsbry, Tryon, Man. Conch., vol. xii., p. 116, pl. xi., figs. 56, 60; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 407; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1903, vol. xv. (New Series), part 2, p. 178, *hab.* Victoria.

*Haliotis clathrata*, Reeve, Conch. Icon., fig. 72; Sowerby, Thes. Conch., 1882, vol. v., pl. vi. (433), fig. 39, who says it is a synonym of *H. nævosa*, Martyn, in which Pilsbry, *loc. cit.*, con-

curs, as a juvenile, from the Philippines; Sowerby also gives *H. ruber*, Leach, and *H. sulcata*, Philippi, as synonyms.

This occurs all along the South Australian coast from the Glenelg River to St. Francis Island.

### *Haliotis conicopora*, Peron.

*Haliotis conicopora*, Peron, Voy. "Terr. Austr.," vol. ii., 1816, p. 80; Hedley, Proc. Linn. Soc., N.S.W., 1905, part 4, p. 520; Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1908, vol. xxi. (New Series), part 1, p. 380.

*Haliotis tubifera*, Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), vol. ix., 1843, p. 24, No. 3, *hab.*, the seas of New Holland.

*Haliotis cunninghamii*, Gray, King's Survey of Australia, vol. ii., Appendix, p. 494, *teste* Gatliff and Gabriel, *loc. cit.*

*Haliotis granti*, Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1902, vol. xiv. (New Series), part 2, p. 183, pl. x., and 1903, vol. xv., p. 180. *Type locality*—Victoria.

Hedley, *loc. cit.*, drew attention to Peron's name and locality, Kangaroo Island, and suggested its conspecificity with *H. tubifera*, Lamarck, and *H. granti*, Pritchard and Gatliff. I think, too that this is the shell figured by Philippi in Abbild und Beschr. Conch., p. 147, pl. iv. and v. (Gen. 2 and 3), under the name *H. naevosa*, Martyns, and which, according to Preiss, came from Mistaken Island, in New Holland. It has both from the figure and description the pipe-like holes, which in profile are well shown.

From an examination of a considerable number of specimens it seems open to question whether this is not really a variety of *H. naevosa*, Martyns, and though some individuals can be easily distributed in their typical species, others cannot be placed in one rather than the other. The validity of the spiral cords and of the axial corrugations, and the extent of projection of the spire above the dorsal surface, so as sometimes to show the basal angle and in other cases not, the consequent downward slope of the surface from the suture to the perforations, or even an upward slope or its rounded curve all vary considerably.

Taken all along the South Australian coastline, at Beachport measuring 17.5 cm. by 13.5 cm.

### *Haliotis iris*, Martyn.

*Haliotis iris*, Martyn, Univ. Conch., vol. ii., fig. 61; Martini and Chemnitz, Conch. Cab., 1788, vol. x., p. 317, pl. 167, figs. 1612, 1613; Wood's Index Test., 1825, p. 175, No. 13, New Zealand; Gmelin, Syst. Nat., 1789, vol. vi., p. 3691, No. 19.

*H. iris*, Gmelin, Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), 1843, vol. ix., p. 23.

*H. iris*, Martyn, Deshayes, Encycl. Meth., 1830, vol. ii., p. 178; Reeve, Conch. Icon., 1846, fig. 37; Hutton, Man. New Zea-

land Moll., 1880, p. 104; *H. iris*, Gmelin, Sowerby, Thes. Conch., 1882, vol. v., p. 20, Sp. 9, pl. iii. (430), figs. 24, 25; *H. iris*, Martyn, Weinkauff, Conch. Cab., Band. vi., Abt. I.B., p. 11, Sp. 8, pl. iv., figs. 3, 4; Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 110, pl. xiii., figs. 65, 66.

Lamarck correctly gives "the seas of New Zealand" as the *habitat*, Reeve gives Kangaroo Island, but Swainson, in Proc. Roy. Soc., Tasmania, 1855, p. 51, wrote: "By some unaccountable mistake it is stated to inhabit Kangaroo Island. It is well known, however, in these colonies (the Australian) to be altogether peculiar to the islands of New Zealand." It has not been taken on Kangaroo Island or on the shore of South Australia.

### *Haliotis roei*, Gray.

*Haliotis roei*, Gray, King's Voy., vol. ii., Appendix, 1827, p. 493, no locality given; Reeve, Conch. Icon., 1846, pl. iv., fig. 10; Sowerby, Thes. Conch., vol. v., 1882, p. 31, Sp. 60, pl. x. (437), figs. 77, 78; Weinkauff, Conch. Cab. (Ed. Küster), Band vi., Abt. I.B., p. 37, No. 28, pl. xv., figs. 4-6; Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 117, pl. xviii., fig. 1, pl. xlviii., figs. 11-13.

*Haliotis scabricosta*, Menke, Moll. Nov. Holl. Spec., 1843, p. 31, No. 172: *Type locality*—Mistaken Island; Philippi, Abbild und Beschreib. Conch., vol. i., 1844, p. 120, No. 4, pl. i., fig. 6.

Sowerby, Pilsbry, and Weinkauff give *H. hargreavesi*, Cox, as a synonym; but Hedley denies the identity, Proc. Linn. Soc., N.S.W., 1905, vol. xxx., part 4, p. 520. The two small examples of this species which the author, Dr. Cox, gave me support Hedley's contention.

It was recorded in Adcock's Handlist of Aquatic Mollusca of South Australia, 1893, p. 9, No. 367, as *H. rugosa-plicata*, Chemn. I have Tate's specimens thus named by him, but they are typical *H. roei*.

The species is rare in South Australia, but has been taken at Encounter Bay, at Aldinga (Mr. Kimber), up to 8.2 cm. long, by 6.5 cm. broad, and at St. Francis Island.

It has not been recorded from Victoria or Tasmania, but is common in Western Australia.

Sowerby gives "New Holland" as the *habitat*; Menke "Mistaken Island," in King George Sound.

### *Haliotis cyclobates*, Peron.

*Haliotis cyclobates*, Peron, Voy. "Terr. Austr.," vol. ii., 1816, p. 80: *Type locality*—Kangaroo Island; Hedley, Proc. Linn. Soc., N.S.W., 1905, vol. xxx., part 4, p. 520; Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1908, vol. xxi. (New Series), part 1, p. 380.

*Haliotis excavata*, Lamarck, Anim. S. Vert., 1822, vol. vi., p. 215; 1843 (2nd Edition, Deshayes, etc.), vol. ix., p. 25, No. 4, "the seas of New Holland"; Deshayes, Encyc. Meth., 1830, vol. ciii., vers. vol. ii., p. 179; 1841, Delessert, Recueil, p. 33, figs.

4a, 4b, "Java seas," also figs. 6a, 6b (error in text 2a, 2b), "Java seas"; Reeve, *Conch. Sys.*, 1842, vol. ii., p. 42, pl. cl., fig. 1; Reeve, *Conch. Icon.*, 1846, vol. iii., pl. viii., fig. 25; H. and A. Adams, *Gen. Recent Moll.*, vol. i., p. 443 (*Padollus*); Sowerby, *Thes. Conch.*, 1882, vol. v., p. 30, Sp. 56, pl. iii. (430), figs. 21, 26; Weinkauff, *Conch. Cab.*, 1883 (Ed. Küster), Band. vi., Abt. I.B., p. 39, Sp. 29, pl. xvi., figs. 1, 2; Pilsbry, Tryon, *Man. Conch.*, 1890, vol. xii., p. 119, pl. ix., fig. 51, pl. xlix., fig. 23; Pritchard and Gatliff, *Proc. Roy. Soc., Victoria*, 1903, vol. xv. (New Series), part 2, p. 180, "Portsea, Port Phillip."

Dredged alive up to 15 fathoms and taken alive on the rocks at low water along the South Australian coastline in both gulfs from Yankalilla Bay to Streaky Bay, and Murat Bay in the west. I did not get it at St. Francis Island nor anywhere in Western Australia. It is recorded from Port Phillip, Victoria, but not from Tasmania. It would seem to be very localized and confined to the southern coast of Australia.

### *Haliotis emmæ*, Gray.

*Haliotis emmæ*, Gray, *MSS.*, *Brit. Mus. Cat.*; Reeve, *Conch. Icon.*, 1846, vol. iii., pl. x., fig. 29; also *Elements of Conch.*, 1860, vol. ii., pp. 12, 13, pl. xxiii., fig. 181; Sowerby, *Thes. Conch.*, 1882, vol. v., p. 32, Sp. 68, pl. ii. (429), fig. 16, "New Zealand"; Weinkauff, *Conch. Cab.* (Ed. Küster), Band. vi., Abt. I.B., p. 56, Sp. 43, pl. xxii., figs. 1, 2; Pilsbry, Tryon, *Man. Conch.*, 1890, vol. xii., p. 122, pl. xiv., fig. 75; Tate and May, *Proc. Linn. Soc., N.S.W.*, 1901, vol. xxvi., pp. 407, 447, "Tasmania"; Pritchard and Gatliff, *Proc. Roy. Soc., Victoria*, 1903, vol. xv. (New Series), part 2, p. 178, "Victoria."

*Padollus emmæ*, Gray, H. and A. Adams, *Gen. Recent Moll.*, 1858, vol. i., p. 443.

W. Swainson, in *Proc. Roy. Soc., Tasmania*, 1855, p. 48, says, "*H. tricotatus*, Lam.: *H. pulcherrima*, Auct.; and our *H. costata*, are (in Reeve's *Conch. Icon.*) erroneously called *H. emmæ*," and cited as Australian species. But *H. costata*, Swainson, is given by Pilsbry as a synonym of *H. rugosoplacata*, Chem. Again, on page 51, "I see no difference between the species figured at plate x., fig. 29 (*Conch. Icon.*, Reeve), under the singular name of *H. emmæ*, and that described by me in the *Bligh Catalogue* as *Haliotis carinata*. . . . Dr. Milligan has fine specimens from the Tasmanian coasts, but we do not think it also inhabits New Holland, as here stated."

It was recorded for South Australia in Adcock's *Handlist of Aquatic Mollusca*, 1893, p. 9, No. 372, as *H. (Padollus) carinata*, Martyn, with *emmæ*, Gray, as a synonym; but this was compiled from Tate's manuscript list, and he, in the *Tasmanian Census* in *Proc. Linn. Soc., N.S.W.*, 1901, pp. 407 and 447, withdrew *H. carinata* in favour of *H. emmæ*.

Taken at the Glenelg River, Lacepede Bay, Edithburgh, St. Francis Island, and Le Hunte Bay, *i.e.*, the whole length of the South Australian coast where examined. It was not found in Western Australia.

Variations consist in the stoutness of the spiral cords, and especially in the prominence of the spiral ridge above the row of holes; this may be barely perceptible, or it may be so marked as to resemble *H. tricostalis*—in fact, it is open to question whether *H. emmae* is not the eastern variant of the western *H. tricostalis*.

### ***Haliotis tricostalis*, Lamarck.**

*Haliotis tricostalis*, Lamarck, Anim. S. Vert., 1882, p. 218.

This species was recorded for South Australia in Adcock's Handlist of Aquatic Mollusca, South Australia, 1893, p. 9, No. 373, as *Haliotis (Padollus) rubicundus*, Montfort, with *tricostalis*, Lamarck; *canaliculata*, Schbt. and Wag.; *scalaris*, Leach, as synonyms. I have not taken it in South Australia, and do not know that it has been collected here. Some of our examples of *H. emmae*, Gray, approach it. Swainson, in Proc. Roy. Soc., Tasmania, 1855, p. 48, speaking of Reeve's Mon. of the genus in Conch. Icon., says, "*H. tricostatus* (meaning *tricostalis*), *H. pulcherrima*, Auct., and our *Haliotis costata*, here erroneously called *H. emmae*," evidently regarding all four as conspecific; whereas Pilsbry makes *tricostalis*, *pulcherrima*, *costata* (a synonym of *rugosoplicata*) and *emmae* four distinct species.

### ***Haliotis parva*, Linne.**

*Haliotis parva*, Linne., Sys. Nat., vol. x., p. 780; Gmelin, Sys. Nat., 1789, Tome i., vol. vi., p. 3689, No. 7; Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 120, pl. xiv., fig. 74; Adcock, Handlist Aquatic Moll., South Australia, 1893, p. 9, No. 374.

Adcock records it for South Australia, but no authentic specimen from our shores is known.

### ***Haliotis pulcherrima*, Martyn.**

*Haliotis pulcherrima*, Martyn, Univ. Conch., pl. lxii., Pilsbry, Tryon, Man. Conch., 1893, vol. xii., p. 124, pl. xiii., fig. 69; Adcock, Handlist Aquatic Moll., South Australia, 1893, p. 9, No. 371.

Pilsbry gives South Australia as one of its localities, and Adcock records it, but no authentic specimen from our shores is known.

### ***Haliotis rugoso-plicata*, Chemnitz.**

*Haliotis rugoso-plicata*, Chemnitz, Conch. Cab., vol. x., p. 311, figs. 1603, 1604, 1604a; Pilsbry, 1890, vol. xii., p. 110, pl. xx., figs. 12, 13.

Pilsbry gives South Australia as one of its localities, but it is unknown here. The shell listed by Adcock under this name is *H. roei*, Gray.

**Scissurella australis**, Hedley.

*Scissurella australis*, Hedley, Memoirs Austr. Mus., 1903, part 6, vol. iv., p. 329, fig. 63; Verco, Trans. Roy. Soc., S.A., vol. xxxiv., p. 115; 1911, Hedley, Commonwealth of Australia, Fisheries, part 1, p. 92, "100 fathoms, off Cape Wiles, South Australia."

**Schismope atkinsoni**, Tenison-Woods.

*Schismope atkinsoni*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1877 (1876), p. 149; Hedley, Austr. Assoc. Adv., Sci., 1909, p. 352; Verco, Trans. Roy. Soc., S.A., 1910, vol. xxxiv., p. 116; Hedley, Commonwealth of Australia, Fisheries, part 1, p. 92.

Dredged by me in 15 to 20 fathoms off St. Francis Island, 100 fathoms off Beachport, and by Hedley in 100 fathoms off Cape Wiles. Taken also at Bunbury, Western Australia. Hedley records it from Queensland.

**Schismope pulchra**, Petterd.

*Schismope pulchra*, Petterd, Jour. of Conch., 1884, vol. iv., p. 139, No. 17; Verco, Trans. Roy. Soc., S.A., 1910, vol. xxxiv., p. 117; Hedley, Commonwealth of Australia, Fisheries, part 1, p. 92.

Dredged off St. Francis Island in 15 to 20 fathoms, 5; and by Hedley in 100 fathoms off Cape Wiles. Taken also in Western Australia.

NOTES ON THE MARINE SHELLS OF WESTERN AUSTRALIA,  
WITH DESCRIPTIONS OF NEW SPECIES.  
PART II.

By Jos. C. VERCO, M.D. (Lond.), F.R.C.S. (Eng.).

[Read October 10, 1912.]

PLATES XV. AND XVI.

This paper is the second in the series, continued from p. 219 of vol. xxxv., 1911, and deals with the genera *Helcioniscus*, *Patella*, *Nacella*, *Acmaea*, *Phenacolepas*, *Haliotis*, and *Schismope*.

It embraces also a list of shells received from Geraldton.

***Helcioniscus illibratus*, Verco.**

*Helcioniscus illibratus*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 205, pl. x., figs. 6-14; Hedley, Commonwealth of Australia, Fisheries, 1911, part 1, p. 93.

King George Sound beach, 3; Ellensbrook, 9; Yallingup, 4 (from these two localities the specimens have a more decided bluish-purple tint); Bunbury beach, 2; in 15 fathoms, 2; in 22 fathoms, 1 (about half as large again as the type); Rottnest Island, 1.

***Patella neglecta*, Gray.**

*Patella neglecta*, Gray, Capt. King's Survey of the Inter-tropical and Western Coasts of Australia, ii., Appendix, p. 492, 1827.

*P. (Scutellastra) neglecta*, Gray, Pilsbry, Man. Conch., 1891, vol. xiii., pp. 95, 96, pl. xx., figs. 41, 42, pl. lviii., figs. 40, 41.

*P. rustica*, Linn, Menke, Moll. Nov. Holl., p. 33, 1843, and Zeitschr. F. Malac., 1844, p. 62.

*Patella melanogramma*, (?) Gmelin, Sowerby, Genera of Shells, vol. i., p. 140.

*Patella zebra*, Reeve, Conch. Icon., 1854, pl. iv., figs. 7a, 7b, "Swan River."

*Locality*. — Esperance beach, few; Hopetoun, few; King George Sound, Rabbit Island, many, and up to full size between water-marks; Ellensbrook and Yallingup, many; Rottnest Island, 1.

This species does not appear to come much further east than Esperance. It was not found on St. Francis Island, nor has it been taken along the coast of South Australia.

On Rabbit Island it attains the length of 100 mm. Nearly every individual exceeding 25 mm. in length carries

one or more patelliform parasites. I thought, naturally, they were young individuals of the same species, but they proved to be always examples of what I have named and described as *Acmaea patellavecta*.

***Patella axiaerata*, n. sp.** Pl. xv., figs. 3 and 4.

Shell small, depressed, conical, elliptical, apex somewhat antemedian, lateral margins somewhat concave, so as to be lifted off a flat surface. Apex blunt, surface smooth; colour opaque-white, numerous rays (18 in the type), golden-yellow, with darker golden axial hairlines in them. Margin simple, smooth. Spatula well marked, large, with a distinct neck and large head. Interior white, through which the yellow rays are visible.

*Dimensions*.—Length, 4.4 mm.; breadth, 3.2 mm.; height, 1.9 mm.

*Habitat*.—Type, Rottneest Island, with many others; King George Sound beach, 8 small.

*Variations*.—Some are shorter and higher, more convex in the hinder slope, more acute at the apex. The number of golden rays may be only 12 or 10, due to the fusion of two narrower into a larger one; sometimes the ray, which is at first single, becomes later double. In some examples the golden hairlines in the rays are conspicuous and numerous. The apical region inside, for a varying extent, may be of a yellowish-brown colour.

The shape of its base suggests that its usual *habitat* is the conical surface of another shell, and as this is a very common habit with *Acmaea*, it may belong to this genus. It recalls *Patella illibrata*, Verco, by its form and apex and rays. It was not taken alive.

Type is in my cabinet.

***Patella ustulata*, Reeve.**

*Patella ustulata*, Reeve, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 206; 1907, vol. xxxi., p. 99; and 1912, vol. xxxvi., p. 182.

This was taken at Esperance Bay and King George Sound; at Ellensbrook up to 25 mm. long, by 20 mm. wide, by 7 mm. high, the largest specimen taken in the West; at Yallingup and at Bunbury, up to 18 mm. long.

They vary greatly. A common form has from 12 to 14 broad white or yellow ribs; the rest of the shell may be white or yellow or black or pinkish-brown. Some, after a moderate growth in this fashion, become wholly black.

They do not reach the size of those at Beachport, which may be 47 mm. by 40 mm.



**Patella aculeata**, Reeve

*Patella aculeata*, Reeve, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 207, and 1912, vol. xxxvi., p. 182

Taken on the beach, King George Sound, 10, the largest is only 23 mm. by 19 mm.; Ellensbrook, 3, up to 21 mm. long; Yallingup, up to 14 mm. It was not taken above Cape Naturaliste. The specimens seem to diminish in size and scaliness as they go west and north, and are not so large as the South Australian shells, which may attain 40 mm. in length.

**Patella hepatica**, Pritchard and Gatliff.

*Patella hepatica*, Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1903, vol. xv. (New Series), part 3, p. 194; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 207.

Esperance Bay, 3, up to 17 mm. by 13 mm.; "Albany" (Dr. Torr), 20 mm. by 15 mm. by 6.5 mm.; Yallingup, 6; Bunbury, 1. This—which is probably a variant of *P. ustulata*, Reeve—is smaller than the Victorian shell, and was not taken above Geographe Bay.

**Patella stellæformis**, Reeve.

*Patella stellæformis*, Reeve, Conch. Sys., 1842, vol. ii., p. 15, pl. cxxxvi., fig. 3; Verco, Trans. Roy. Soc., S.A., 1912, p. 182.

Taken on the beach at Esperance Bay, 1, very large, 39 mm. long, 37 mm. wide, and 12 mm. high, and 3 small specimens, scaly, with 8 ribs, the anterior splitting early into two; at Albany, many, 1 7-ribbed, the others 8-ribbed, outside speckled brown, inside white or brownish-yellow or speckled red-brown; at Ellensbrook, very many, up to 22 mm. long and 21 mm. wide and 6.5 mm. high, mostly 8-ribbed, some 7-ribbed, others 9-ribbed, rough and speckled; on Rottnest Island, several, up to 18 mm. long and 15 mm. wide and 6.5 mm. high.

The reddish-brown specks outside may be arranged in radial series on the ribs, or scattered irregularly on the surface. Internally the spatula may be brown, but generally white. There may be a red-brown line along the groove of the ribs. No specimens of the polygonal variety, *P. chapmani*, Tenison-Woods, or of the variety *Acmæa albida*, Tenison-Woods, were found. The typical forms were much more numerous and foliaceous than on the eastern shores of South Australia.

**Nacella parva**, Angas.

*Nacella parva*, Angas, Proc. Zool. Soc., London, 1878, p. 862, pl. liv., fig. 12; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 208, 1907, vol. xxxi., p. 101, 1912, vol. xxxvi., p. 183.

Taken in King George Sound on the beach, and in 10 to 15 fathoms very many, and in 28 fathoms a few; on Bunbury beach, 3; in Geographe Bay, 15 fathoms, 2; off Fremantle, in 6 fathoms, 1. They vary greatly in width; some may be 6.75 mm. long by 2.25 mm. wide, and others 5.25 mm. long by 1.75 mm. wide, and so confirm the suggestion made in 1906 that *N. compressa*, Verco, is only a variant. They are none of them quite so wide as the South Australian examples, 5.6 mm. by 2.8 mm.; and none of them quite so narrow, 5 mm. by 1.6 mm., but are intermediate. At King George Sound they are much more common in the shallow dredging than anywhere in South Australia.

***Nacella crebrestriata*, Verco.**

*Nacella crebrestriata*, Verco, Trans. Roy. Soc. S.A., 1904, vol. xxviii., p. 144, pl. xxvi., figs. 20, 21; 1906, vol. xxx., p. 208; 1907, vol. xxxi., p. 101; and 1912, vol. xxxvi., p. 183.

King George Sound beach, 3; Yallingup, 5; Rott-nest Island, 2.

**Var. *roseoradiata*, var. nov.**

This is typically a broader and more elliptical shell, has about two-thirds as many radial striæ, and 15 or 16 deep-pink axial rays, gradually increasing in width.

This was taken at Guichen Bay, South Australia; but in much better condition and more abundantly at Ellensbrook and Yallingup. Some examples are oval rather than elliptical, being narrower anteriorly; they vary somewhat in width, and one has its lateral margins incurved, as though the narrow surface—e.g., *Zostera*—on which it lived had shrunk, and consequently had led to the contraction of the sides of the aperture of the shell.

Type is in my cabinet.

***Nacella stowæ*, Verco.**

*Nacella stowæ*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., pl. x., figs. 4, 5; 1912, vol. xxxvi., p. 183.

King George Sound beach, 8; Bunbury beach, 4; Rott-nest Island, 2. Identical with the South Australian specimens, but in poor condition.

***Acmaea patellavecta*, n. sp. Pl. xv., figs. 5-7 ;  
pl. xvi., fig. 5.**

Shell solid, elliptical, conical. Apex at the junction of the anterior and middle third, eroded. Margin in profile concave at the sides (due to its habit of living on a patella). Anterior slope nearly straight, posterior somewhat convex.

Outer surface with 40 radial, low, broad, round ribs, with linear interspaces, slightly crenulating the margin. Obsolete accremental growth-lines cross the ribs. The general colour is a sordid white, and the surface is mostly eroded. The interior is bordered with a narrow continuous band of a grey colour, articulated with 40 equidistant blackish-brown radially arranged spots, corresponding with the intercostal spaces. The spatula is well marked, bluish-white, with distinct muscle-scars rather wide in front, so as to give it a decided neck, beyond which it projects with a convex end.

The radula consists of 105 rows of teeth with the formula 2 (3 0.3.) 2, or more correctly 2 ( $\overline{1.1.1.0.1.1.1}$ ) 2. The marginals are simple, bent nearly at a right angle in the middle, with straight stems and curved cusps. The outer laterals are in line with each other, the inner of the two is only about half as wide as the other, with distinct cusps but with united bases which (though the radula may be picked to pieces) are inseparable. The inner laterals are at a higher level, and are close to each other, but their bases are quite separable. There is no central tooth. It has a triangular branchia extending from the left over the neck to the right, without any branchial cordon.

*Dimensions*.—Length, 31.5 mm.; breadth, 23 mm.; height, 14 mm.; height of the curve at the border, 2.5 mm.

*Locality*.—Type from Cape Naturaliste.

It is found also in abundance on Rabbit Island, King George Sound, and at Ellensbrook and Yallingup, south of Cape Naturaliste.

It lives on the shell of *Patella neglecta*, Gray. Nearly every example of which above 25 mm. in length carries one or more (hence its name).

*Variations*.—It may grow to the size of 41 mm. long by 32 mm. wide and 21.5 high. The ribs may increase to more than 50.

The outer surface is generally much eroded, so that the apex is absent. In one example, 18 mm. by 13 mm. by 5 mm., the top is a brown point without any sign of a spiral, 5 mm. by 2.5 mm. in size surrounded by a white area 2 mm. by 1 mm., from which project 9 primary rays. These increase rapidly by splitting and by intercalation to 23 at the margin.

The blackish markings inside the border vary with the number of ribs. They may be very distinct, but in the larger shells they fade out and may disappear altogether; sometimes in the smaller shells they may be very faint. The narrow marginal band may be so dark as to quite obscure

the spots. The colour inside varies. The inner border may be a pale heliotrope, within this an opaque white band, and then heliotrope as far as the muscle-scar. The interior may be wholly dark blotchy-brown, except the muscle-scar, which is white, and the front two-thirds of the spatula, which may be bluish-white. The brown may be more or less blotched about a whitish interior, or almost absent. In some a faint greenish-blue tint is present, deepest in the spatula.

*Diagnosis*.—Its *habitat*, on the back of living *Patella neglecta*, Gray, suggested that it might be the young of this mollusc: but it is not narrowed anteriorly, the ribs are low, round, and approximate; the apex is less eccentric, the spots inside—if present—are single, and not in couples. The dentition and branchiæ are not those of *Patella*, but of *Acmaea*.

Its other ally is *A. alticostata*, Angas, but its ribs are more numerous, lower, and more approximate than in Angas' species; it has not the intercostal curved concentric dark markings, and the internal marginal spots are disposed radially instead of laterally. The dentition of the radula separates them widely. *Vide* pl. xvi., figs. 3-5.

It closely resembles the figure of *Patella nigrosulcata*, Reeve, *Conch. Icon*, 1885, Sp. 84a, *hab.* ('), and may prove to be this species; *Patella (scutellastra) stellaformis*, Reeve, *var. nigrosulcata*, Reeve, Pilsbry, *Man. Conch.*, 1891, vol. xiii., p. 100, pl. lxi., figs. 66, 67. Pilsbry gives no *habitat* for this variety, but for the species he gives "Japan to Port Jackson, South Australia," etc.

Though *P. stellaformis*, Reeve, is abundant, large, and typical in the localities where my shell is found, no intermediate forms were taken. The figures do not indicate a laterally concave base. If *P. stellaformis* has been proved by dissection to be a *Patella*, this cannot be a variety, because this is an *Acmaea*.

Type in my collection.

### *Acmaea alticostata*, Angas.

*Patella alticostata*, Angas, *Proc. Zool. Soc.*, London, 1865, p. 56, pl. ii., fig. 11; Verco, *Trans. Roy. Soc.*, S.A., 1912, vol. xxxvi., p. 183.

Taken at Esperance Bay, 1 measuring 26 mm. long by 22 mm. broad and 6 mm. high, in perfect condition, has only 9 very broad, round ribs with narrow intercostal spaces, but is plainly of this species: at King George Sound, abundant, and typical up to 44 mm. by 42 mm. by 12 mm.; at Ellensbrook, 3, up to 20 mm.; at Yallingup, 3, up to 23 mm.; at Bunbury, up to 14 mm.; at Rottnest, up to 25 mm.

**Acmaea flammea**, Quoy and Gaimard.

*Patelloidea flammea*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 354, pl. lxxi., figs. 15, 16; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 188.

Var. *Jacksoniensis*, Reeve (*Patella*), Conch. Icon., vol. viii., 1855, pl. xxxix., figs. 127a, 127b.

King George Sound beach, many, similar to our South Australian form, without a definite dark maltese cross, but with four white radial bands more or less irregular and indistinct. Shape mostly narrowed in front, some very much; Ellensbrook; Yallingup, many, up to 17 mm. by 13 mm. by 5.5; Bunbury; Rottnest Island, many and large, up to 25 mm. by 20 mm. by 12.5 mm.

Var. *Crucis*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1877 (1876), p. 52.

King George Sound beach, up to 20 mm. by 16 mm.; Yallingup; Bunbury; Rottnest Island, up to 25 mm. by 20 mm. by 11.5 mm.

"Geraldton and Abrolhos Island" (Dr. Torr). They are identical with the South Australian examples in shape, size, and colouring.

**Acmaea conoidea**, Quoy and Gaimard.

*Patelloidea conoidea*, Quoy and Gaimard, Voy. "Astrolabe," Zool., vol. iii., 1834, p. 355, pl. lxxi., figs. 5, 7; Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 214.

Ellensbrook, 1, half-grown. A form was found on the rocks at the south end of Rottnest Island, the largest example being 22 mm. long, 18 mm. wide, and 12.5 mm. high; it may be 18 mm. by 13.5 mm. by 8 mm., or 15 mm. by 11 mm. by 4 mm. There may be about 16 radial, thread-like ribs, with from 2 to 5 intervening threadlets. These may be absent except for obsolete primary threads. The apex is nearly central, slightly anterior and blunt. The colour is wholly black, with a black marginal band within. The rest of the interior is white, except the apical third, which is lighter or darker brown. In some the marginal black band may be broken by a linear radial extension of the white interior to the edge at one point towards the back, or at two symmetrical points or at several, and in some specimens radial black colour-bands are visible in the interior through the white. When the shell is eroded outside some four or five white radial bands may be displayed or quite a number, or the erosion may destroy all the black outer coating and leave only white; and if the rubbing and rolling affect the margin, it reveals an irregularly articulated border of white and black. This, I think, is probably the *P. conoidea* of Quoy. Though

I sought carefully on every beach examined for his species, I could not find any shell to match his unique type specimen, and I think it is probably somewhat of a monstrosity as regards its comparative height. The lateral concavity of its borders is explained by its resting on some convex surface, while erosion has removed both sculpture and colour from its upper three-fourths. Although the shells gathered by me are so distinctive in some examples by their wholly deep-black exterior, their internal black border, and elate conical shape, I feel sure they are only a further variant of the shells taken from the same rocks which I have recorded under the name of *A. flammea*, Quoy and Gaimard, *var. jacksoniensis*, Reeve.

***Acmæa calamus*, Crosse and Fischer.**

*Patella calamus*, Crosse and Fischer, Journ. de Conch., 1864, p. 348, and 1865, p. 42, pl. iii., figs. 7, 8; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 184.

**Var. *polyactina*, Verco.**

Taken on King George Sound beach, 6; at Yallingup, 4; on Bunbury beach, 3; in Geographe Bay, 15 fathoms 2, in 22 fathoms 3; off Fremantle, in 6 fathoms, 2; on Rott-nest Island, 3; "Cottesloe," 1; "Geraldton," 1. This variety seems to replace the typical shell in Western Australia.

***Acmæa septiformis*, Quoy and Gaimard.**

*Patelloida septiformis*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 362, pl. lxxi., figs. 43, 44; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 184.

King George Sound beach, up to 15 mm. long and 12 mm. wide; Ellensbrook, 3, worn; Yallingup, 1, worn; none further north.

***Acmæa subundulata*, Angas.**

*Acmæa subundulata*, Angas, Proc. Zool. Soc., London, 1865, p. 155; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 185.

A number were taken on the beach at Esperance Bay, but none further west.

***Phenacolepas calva*, Verco.**

*Scutellina calva*, Verco, Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 217, pl. viii., figs. 9, 10; also *op. cit.*, 1912, vol. xxxvi., p. 185.

King George Sound beach, 1; in 14 fathoms, 1.

**Phenacolepas alboradiata**, Verco.

(*Scutellina*) Trans. Roy. Soc., S.A., 1906, vol. xxx., p. 217; also *op. cit.*, 1912, vol. xxxvi., p. 185.

King George Sound beach, 1.

**Haliotis albicans**, Quoy and Gaimard.

*Haliotis albicante*, Quoy and Gaimard, Voy. "Astrolabe," Zool., vol. iii., pl. lxxviii., figs. 1, 2.

*H. albicans*, Quoy and Gaimard, Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 185.

Taken at King George Sound, the *type locality*.

**Haliotis elegans**, Koch.

*Haliotis elegans*, Koch, in Philippi, Abbild und Besch. Conch., 1844, vol. i., p. 119, pl. i., figs. 1, 2; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 186.

The *type locality* is "the western shore of New Holland, very rare." It was taken on Rottnest Island.

**Haliotis conicopora**, Peron.

*Haliotis conicopora*, Peron, Voy. Terr. Austr., vol. ii., 1816, p. 80; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 187. Synonyms are *H. tubifera*, Lamarck, and *H. granti*, Pritchard and Gatliff.

Taken at Esperance; in King George Sound; at Ellensbrook, measuring 17.5 cm. by 13.5 cm.; and on Rottnest Island.

**Haliotis roei**, Gray.

*Haliotis roei*, Gray, King's Voy., vol. ii., Appendix, 1827, p. 493; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 188.

Taken at Esperance Bay, King George Sound, Ellensbrook, Bunbury, and Rottnest Island. This is by much the most common *Haliotis* in Western Australia. It may be 10 cm. long by 8.2 cm. broad. It appears to have come round from the west along the southern coast of Australia, and reached Encounter Bay.

**Haliotis tricostalis**, Lamarck.

*Haliotis tricostalis*, Lamarck, Anim. S. Vert., 1822, p. 218; also (2nd Edition, Deshayes, etc.), 1843, vol. ix., p. 30, No. 14 "Java seas"; Deshayes, Encyc. Meth., 1830, vol. ciii., Vers., vol. ii., p. 181, No. 12; Delessert, Recueil., 1841, pl. xxxiii., figs. 8a, 8b; Menke, Moll. Nov. Holl., 1843, p. 32, No. 177, "West coast of New Holland"; H. and A. Adams, Gen. Recent Moll., 1858, vol. i., p. 443, pl. 1, fig. 7 (*Padollus*); Chen, Man. Conch., 1859, vol. i., p. 368, figs. 2746, 2747; Weinkauff, Conch. Cab. (Ed. Küster), 1883, Band. vi., Abt. 1.B., p. 13, Sp. 10, pl. v., figs. 3, 4;

Pilsbry, Tryon, Man. Conch., 1890, vol. xii., p. 123, pl. xii., pp. 84, 85; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 190.

Hedley, in Proc. Linn. Soc., N.S.W., 1906 (1905), part 4, p. 521, writes:—"Pilsbry marks Montfort's name (*i.e.*, *Halotis rubicundus*) as doubtful, but it was recognized and accepted by Dr. J. E. Gray in King's Survey Trop. Austr., Appendix ii., 1827, p. 495, and he had unusual facilities for ascertaining the facts of the case." In May, 1907, he wrote to me privately:—"I find Bolten has a *Halotis rubicunda*, Mus. Bolt., p. 14, No. 160, which upsets the later *H. rubicundus* of Montfort. I suppose *H. tricoloris*, Lamarck, 1822, should be called *H. scalaris*, Leach, 1814. The copy of Anim. S. Vert. in the library of the Australian Museum, Sydney, formerly belonged to Wm. Swainson. In the margin of p. 218 is a pencil note in Swainson's hand, 'This is the *Padollus scalaris* of Leach.' " Hedley's suggestion is commended to those who have the literature and material necessary to settle the question. Meanwhile I use the well-known name of Lamarck.

The species is less common than *H. roei*, Gray, but yet not rare. It was taken at Esperance, Albany, Ellensbrook, Bunbury, and Rottnest Island. The last locality provided a specimen measuring 11.5 cm. by 9.25 cm.

### **Schismope atkinsoni**, Tenison-Woods.

*Scissurella atkinsoni*, Tenison-Woods, Proc. Roy. Soc., Tasmania, 1877 (1876), p. 149; (*Schismope*) Verco, Trans. Roy. Soc., S.A., 1912, p. 191.

Taken on Bunbury beach, 1.

### **Schismope pulchra**, Petterd.

*Schismope pulchra*, Petterd, Journ. of Conch., 1884, vol. iv., p. 139, No. 17; Verco, Trans. Roy. Soc., S.A., 1912, vol. xxxvi., p. 191.

Hopetoun beach, 2: King George Sound beach, 2.

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## A LIST OF SHELLS RECEIVED FROM GERALDTON, WESTERN AUSTRALIA.

Two or three years ago Dr. Torr brought me from Geraldton, and the Abrolhos or Houtman Islands close by, a number of shells he had collected there, and during this year Mr. Bardwell, a resident in the town, has sent me a small consignment. From this material I have prepared a list of all the species received up to the present. The two



localities are so adjacent that I have placed the species from both of them together. An asterisk has been attached to those which are found in South Australian waters, so that at a glance the proportion of species common to the two regions can be noted.

Of the 150 shells identified in this list, 108 are found in South Australia. Of the 12 shells not named, 4 are almost certainly found there, and possibly three others, or 112 probably, and 115 possibly among 162; that is, 71 per cent. These are, of course, the most common shells, and if the same ratio holds with the rare species, nearly three-fourths of the marine mollusca will be common to the two far distant localities. The proportion of 71 per cent. applies to the Pelecypods and to the Gasteropods alike.

- \**Spirula spirula*, *Linne*, 1758, *Nautilus*
- Cadulus occiduus*, *Verco*, 1912.
- Cryptoplax*, sp.
- Patella neglecta*, *Gray*, 1827.
- \**Nacella parva*, *Angas*, 1878.
- \**Acmaea alticostata*, *Angas*, 1865, *Patella*.
- \**Acmaea septiformis*, 1834, *Patelloidea*.
- \**Acmaea crucis*, *Tenison-Woods*, 1877.
- \**Acmaea polyactina*, *Verco*, 1912.
- Acmaea patella-vecta*, *Verco*, 1912.
- \**Haliotis roei*, *Gray*, 1827.
- \**Megatebennus omicron*, *Crosse and Fischer*, 1864,  
    *Fissurella*.
- \**Macroschisma tasmaniae*, *Sowerby*, 1866.
- \**Gena nigra*, *Quoy and Gaimard*, 1834, *Stomatella*.
- \**Turbo jourdani*, *Kiener*, 1839.
- \**Turbo stamineus*, *Martyn*, 1784, *Limax*.
- Turbo pulcher*, *Reeve*, 1842.
- Turbo ticaonicus*, *Reeve*, 1842.
- \**Astraliium fimbriatum*, *Lamarck*, 1822, *Trochus*.
- Astraliium stellare*, *Gmelin*.
- \**Phasianella australis*, *Gmelin*.
- \**Phasianella ventricosa*, *Quoy and Gaimard*, 1834.
- \**Phasianella variegata*, *Lamarck*, 1822.
- \**Phasianella rosea*, *Angas*, 1867, *Eutropia*.
- Phasianella*, sp.
- \**Cyclostrema tatei*, *Angas*, 1878.
- Trochus obeliscus*, *Gmelin*.
- \**Clanculus plebeius*, *Philippi*, 1846, *Trochus*.
- \**Monodonta melanloma*, *Menke*, 1843.
- Monodonta (Chlorodiloma) zeus*, *Fischer*, 1874, *Trochus*.
- \**Cantharidus lehmanni*, *Menke*, 1843, *Trochus*.

- \**Cantharidus pulcherrimus*, *Wood*, 1828, Trochus.
- \**Thalotia conica*, *Gray*, 1827, Monodonta.
- \**Thalotia chlorostoma*, *Menke*, 1843, Trochus.
- \**Thalotia neglecta*, *Tate*, 1893.
- Thalotia indistincta*, *Wood*, 1828, Trochus.
- \**Phasianotrochus irisodontes*, *Quoy and Gaimard*, 1834, Trochus.
- \**Leiopyrga octona*, *Tate*, 1891.
- \**Euchelus baccatus*, *Menke*, 1843, Monodonta.
- \**Euchelus ampullus*, *Tate*, 1893.
- Nerita undata*, *Linne*.
- Nerita polita*, *Linne*, var. *antiquata*, *Recluz*, 1841.
- \**Syrnola tincta*, *Angas*, 1871.
- \**Odostomia simplex*, *Angas*, 1871.
- \**Odostomia pupæformis*, *Sowerby*, 1865.
- \**Odostomia vincentina*, *Tryon*, 1886.
- \**Oscilla tasmanica*, *Tenison-Woods*, 1877 (1876), Parthenia.
- \**Turbonilla hofmani*, *Angas*, 1867.
- \**Turbonilla fusca*, *A. Adams*, 1855, Chemnitzia.
- \**Cingulina spina*, *Grosse and Fischer*, 1864, Turritella.
- \**Scala aculeata*, *Sowerby*, 1844, Scalaria.
- \**Scala jukesiana*, *Forbes*, 1852, Scalaria.
- \**Crossea labiata*, *Tenison-Woods*, 1876 (1875).
- \**Litorina mauritiana*, *Lamarck*, 1822, Phasianella.
- Tectarius rugosus*, *Menke*, 1843, Littorina.
- Planaxis sulcatus*, *Born*, 1778, Buccinum.
- Modulus disculus*, *Philippi*, 1846.
- \**Risella melanostoma*, *Gmelin*, 1789, Trochus.
- \**Diala monile*, *A. Adams*, 1862, Alaba.
- \**Diala lauta*, *A. Adams*, 1864, Alaba.
- \**Capulus conicus*, *Schuhmacher*, 1817, Amalthæa.
- \**Capulus antiquatus*, *Linne*.
- Crepidula aculeata*, *Gmelin*, Patella.
- \**Ianthina violacea*, *Bolten*.
- \**Natica collei*, *Recluz*, 1843.
- \**Polinices conica*, *Lamarck*, 1822, Natica.
- \**Eunaticina papilla*, *Gmelin*, Sigaretus.
- \**Truncatella scalarina*, *Cox*, 1868.
- \**Truncatella marginata*, *Küster*.
- \**Rissoa (Setia) nitens*, *Frauenfeld*, 1867, Setia.
- Rissoa*, sp.
- Rissoa*, sp.
- Rissoa*, sp.
- Rissoa*, sp.
- Rissoa*, sp.
- Rissoa*, sp.

- \*Rissoa (Epigrus) petterdi, *Brazier*, 1894, Rissoa.
- \*Rissolina flexuosa, *Gould*, 1861.
- \*Vermicularia siphon, *Lamarck*, 1818, Serpula.
- \*Siliquaria weldii, *Tenison-Woods*, 1876, Tenagodus.
- \*Bittium granarium, *Kiener*, 1842, Cerithium.
- \*Cerithium icarus, *Bayle*, 1880.
- Cerithium cordigerum, *Bayle*, 1880.
- \*Triphora granifera, *Brazier*, 1894.
- Plesiotrochus monachus, *Crosse and Fischer*, 1864, Cerithium.
- Campanile læve, *Quoy*, 1834, Cerithium.
- Strombus floridus, *Lamarck*, 1822.
- Bursa anceps, *Lamarck*, Ranella.
- Cypræa caput-serpentis, *Linne*.
- Cypræa carneola, *Linne*.
- Tonna variegata, *Lamarck*, 1822, Dolium.
- \*Cymatium exaratum, *Reeve*, 1844, Triton.
- \*Pyrene versicolor, *Sowerby*, 1832, Columbella.
- \*Pyrene semiconvexa, *Lamarck*, 1822, Buccinum.
- \*Pyrene austrina, *Gaskoin*, 1851, Columbella.
- \*Pyrene atkinsoni, *Tenison-Woods*, 1876, Drillia.
- Cantharus undosus, *Linne*, 1758, Buccinum.
- \*Arcularia pauperata, *Lamarck*, 1822, Buccinum.
- Arcularia glans, *Linne*, 1758, Buccinum.
- Arcularia dorsata, *Bolton*, Buccinum.
- Thais hippocastanea, *Linne*, 1758, Murex.
- Thais succincta, *Martyn*, 1784, Buccinum.
- \*        var. textiliosa, *Lamarck*, 1822.
- \*        var. ægrota, *Reeve*.
- Thais lineata (?), *Lamarck*.
- Drupa chaidea (?), *Duclos*, 1832, Purpura.
- Drupa margariticola, *Broderip*, 1832, Murex.
- Megalatractus aruanus, *Linne*, 1758, Murex.
- \*Marginella angasi, *Brazier*, 1870.
- Mitra.
- \*Cymbium flammeum, *Bolton*, 1798, var. miltonis, *Gray*.
- \*Oliva australis, *Duclos*, 1835.
- \*Clathurella rufozonata, *Angas*, 1877.
- \*Cythara kingensis (?), *Petterd*, 1879, Daphnella.
- \*Conus anemone, *Lamarck*, 1810.
- Conus miliaris, *Hwass*.
- \*Bulla australis, *Gray*, 1825.
- Hydatina physis, *Linne*, 1758, Bulla.
- \*Tornatina fusiformis, *A. Adams*, 1854, Bulla.
- \*Retusa, sp.
- \*Alys exiguus (?), *A. Adams*, 1854.
- \*Siphonaria baconi, *Reeve*, 1856.

- \**Siphonaria stowæ*, *Verco*, 1906  
*Siphonaria*, sp.
  - \**Nucula micans*, *Angas*, 1878.
  - \**Arca navicularis*, *Bruguière*, 1797.
  - \**Barbatia domingensis*, *Lamarck*, 1822, *Arca*.
  - \**Glycimeris radians*, *Lamarck*, 1819, *Pectunculus*.
  - \**Meleagrina fimbriata*, *Dunker*, 1852, *Avicula*.  
*Vulsella vulsella*, *Linne*.
  - Septifer bilocularis*, *Linne*, 1756, *Mytilus*.
  - \**Brachyodontes erosus*, *Lamarck*, 1819, *Mytilus*
  - \**Modiolaria paulucciæ*, *Crosse*, 1863, *Crenella*.
  - \**Cardita crassicosta*, *Lamarck*, 1819.  
*Cardita incrassata*, *Sowerby*, 1825.
  - \**Chama spinosa*, *Broderip*.  
*Chama fimbriata*, *Reeve*, or *ruderalis*, *Lamarck*.
  - \**Lucina tatei*, *Angas*, 1878.
  - \**Loripes icterica*, *Reeve*, 1850.
  - \**Thyasira globosa*, *Forskæl*.
  - \**Lasea scalaris*, *Philippi*, 1847, *Poronia*.  
*Lepton*, sp.
  - \**Rocheffortia donaciformis*, *Angas*, 1877, *Mysella*.
  - \**Cardium elongatum*, *Bruguière*.
  - \**Cardium erugatum*, *Tate*, 1888.  
*Cardium*, sp.
  - Codakia interrupta*, *Lamarck*, 1818, *Cytherea*.
  - \**Sunetta excavata*, *Hanley*, 1842, *Cytherea*.  
*Chione marica*, *Linne*, *Venus*.
  - \**Chione undulosa*, *Lamarck*, 1818, *Venus*.  
*Gafrarium australe*, *Sowerby*, 1851, *Circe*.
  - \**Gafrarium angasi*, *E. A. Smith*, 1885, *Circe*.
  - \**Venerupis crenata* (?), *Lamarck*, 1818.
  - \**Petricola lapicida*, *Chemnitz*, *Venus*.
  - \**Tellina albinella*, *Lamarck*, 1818.  
*Tellina perna*, *Spengler*.
  - \**Tellina decussata*, *Lamarck*, 1815.
  - \**Donax brazieri*, *E. A. Smith*, 1891.  
*Donax columbella*, *Lamarck*.  
*Donax sulcarius*, *Menke*.
  - \**Saxicava arctica*, *Linne*, 1767, *Mya*.
  - \**Pholas australasie*, *Sowerby*, 1849.
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## SHELLS FROM THE GREAT AUSTRALIAN BIGHT.

By JOS. C. VERCO, M.D. (Lond.), F.R.C.S. (Eng.).

[Read October 10, 1912.]

## PLATES X. TO XIV. AND XVI.

In March, 1912, the Federal Minister of Trade and Customs granted me permission to go on the trawler "Endeavour" during a trip of investigation in the Bight.

The area covered extended from 30 to 120 miles west of the longitude of Eucla, along the 100-fathom line, the trawl being taken across this line from 75 fathoms to 120 fathoms. The 100-fathom line followed the curve of the coast fairly uniformly at a distance of about 60 miles. The shells obtained were those brought up incidentally in the large trawl when this was gathering fish. As its mesh was comparatively large, very few small shells were taken. The fauna was consequently quite different from that I have dredged off the South Australian coast in deep water before, when either a very fine-meshed net-dredge or a conical iron bucket-dredge has been used, and only smaller forms have been obtained. Mr. Dannevig, the Director of the Fisheries investigation, very kindly gave me two hauls with my bucket-dredge in deep water, and so supplied me with material for comparison with what I have taken in a similar manner and at equal depths elsewhere.

I am pleased to take this opportunity of expressing my thanks to the Ministerial heads of the Department in the Commonwealth and in the State for the opportunity of securing much interesting material, and also to the officers and men on the trawler for their very ready and interested help.

In this paper, owing to lack of time, I am only able to deal with the larger Gasteropods. I hope to deal with the smaller forms and with the Pelecypods in the future.

***Phasianella australis*, Gmelin.**

*Buccinum australe*, Gmelin, Sys. Nat., 1788, p. 8490, No. 178.

One large specimen, dead, in poor condition, dredged in 100 fathoms 90 miles west of Eucla.

**Clanculus leucomphalus**, Verco.

*Clanculus leucomphalus*, Verco, Trans. Roy. Soc. S.A., 1905, vol. xxix., p. 168, pl. xxxi., figs. 9-11.

One example was taken alive in 72 fathoms 40 miles west of Eucla, rather larger than the type, being 8.5 mm. high and 12 mm. in diameter.

**Calliostoma hedleyi**, Pritchard and Gatliff.

*Calliostoma hedleyi*, Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1902 (1901), vol. xiv. (New Series), part 2, p. 182, pl. ix., fig. 4: *Type locality*—Western Port (Gatliff); also *op. cit.*, 1906 (1905), vol. xviii. (New Series), part 2, p. 65; Hedley and May, Records Austr. Mus., 1908, vol. vii., p. 109, "100 fathoms, off Cape Pillar, Tasmania."

One example, taken in 80 fathoms 80 miles west of Eucla.

**Crepidula immersa**. Angas.

*Crepidula immersa*, Angas, Proc. Zool. Soc., London, 1865, p. 57, pl. ii., fig. 12: *Type locality*—"Port Lincoln, South Australia"; also p. 174, No. 118; Watson, 1886, "Chall." Zool., vol. xv., p. 460, No. 4, "Bass Strait"; Tryon, Man. Conch., 1886, vol. viii., as a synonym of *C. onyx*, Sowerby, p. 128, pl. xxxviii., figs. 46, 47; J. B. Wilson, 1887, Vict. Nat., p. 116, "Port Phillip, Victoria"; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1900, vol. xii., p. 201; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 377, as a synonym of *C. unguiformis*, Lamarck, Tasmania; also p. 445.

Taken in 75 fathoms 80 miles west of Eucla, up to 44.5 mm. in length, 3 quite fresh.

**Caledoniella contusiformis**, Basedow.

*Caledoniella contusiformis*, Basedow, Trans. Roy. Soc., S.A., vol. xxix., 1905, p. 183, pl. xxviii., fig. 1; *var. pulchra*, pl. xxviii., fig. 3.

Taken in 72 to 88 fathoms, 1, *C. pulchra*; in 88 to 100 fathoms, very many; in 100 fathoms, very many; in 96 to 84 fathoms, 12 specimens; and in 95 to 120 fathoms, very many. The trawling extended from 40 miles to 120 miles west of the longitude of Eucla. The examples were so numerous that we kept as many as we thought we might want and threw the rest overboard with the rubbish. They seemed to be most plentiful when large masses of green, sponge-like material were brought up. They were of varying sizes, but attained larger dimensions than the type, the shell reaching a maximum of 37 mm. long by 29 mm. wide. We did not secure a single specimen of the other varieties of this species, such as *testudinis* or *labyrinthina*, nor of the typical *contusiformis*, though variations in colour-marking were found in *C. pulchra*. Some had just the same colouration as

the example figured, the shield 'of a rich yellow ground-colour, with large circular or oval lighter blotches surrounded by wreaths of black.' A very large number were altogether destitute of the black wreaths, and had pale-yellow areas on the darker-yellow ground. Others had opalescent-white spots instead of the pale-yellow, and others again had yellow spots on an opalescent-white ground.

Balch, of Boston, Massachusetts, in a paper on a new Labradorean species of *Onchidiopsis*, in the Proc. U.S. Nat. Mus., vol. xxxviii., No. 1761, p. 469, places *Caledoniella* in the subfamily *Velutininae*, of the family *Lamellariidae*; but in order to locate the genus definitely in its subfamily it is necessary to determine whether the animal has the sexes separate or united, and whether it has an expiratory cleft.

### ***Turritella runcinata*, Watson.**

*Turritella runcinata*, Watson, Jour. Linn. Soc., vol. xv., 1881, p. 217; Verco, Trans. Roy. Soc., S.A., 1910, vol. xxxiv., p. 122.

Taken in 50 fathoms west of Eucla, 2; 75 fathoms 80 miles west of Eucla, 3; 80 fathoms 80 miles west of Eucla, 4; 101 fathoms 80 miles west of Eucla, 1. It may reach 64 mm. in length by 17 mm. in width. They were all dead.

### ***Vermicularia flava*, Verco.**

*Vermicularia flava*, Verco, Trans. Roy. Soc., S.A., 1907, vol. xxxi., p. 214, fig. 1; Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1908, vol. xxi. (New Series), part 1, p. 376, "Western Port"; Hedley and May, Records Austr. Mus., 1908, vol. vii., p. 111, "100 fathoms, off Cape Pillar, Tasmania"; Hedley, Commonwealth of Australia, Fisheries, 1911, part 1, p. 93, "100 fathoms, off Cape Wiles."

Taken in 80 fathoms 80 miles west of Eucla, alive; in 100 fathoms 90 miles west of Eucla.

### ***Siliquaria australis*, Quoy and Gaimard.**

*Siliquaria australis*, Quoy and Gaimard, Voy. "Astrolabe," Zool., 1834, vol. iii., p. 302; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 378, recorded for Tasmania; Menke, Moll. Nov. Holl., p. 10, No. 28, recorded for Western Australia; Angas, Proc. Zool. Soc., 1865, p. 174 (*Tenagodes*), recorded for South Australia; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1900, vol. xii. (New Series), part 2, p. 204, recorded for Victoria.

Dredged alive in large masses of yellow sponge in 80 fathoms 80 miles west of Eucla, and in 75 fathoms; in 100 fathoms 90 miles west of Eucla, and in 72 fathoms 40 miles west of Eucla.

**Siliquaria weldii**, Tenison-Woods.

*Tenagodus weldii*, Tenison-Woods, Proc. Roy. Soc., Tasmania. 1876 (1875), p. 144, "East coast, Tasmania"; Pritchard and Gatliff, Proc. Roy. Soc. Victoria, 1900, vol. xii. (New Series), part 2, p. 205 (*Tenagodes*), "Port Phillip, Western Port"; May, Proc. Roy. Soc., Tasmania, 1902, p. 110, "Type in Tas. Mus., Hobart."

*Siliquaria (Pyxipoma)*, Tryon, Man. Conch., 1886, vol. viii., p. 191, pl. lviii., fig. 28; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 378; Hedley, Records Austr. Mus., 1905, vol. vi., part 2, p. 42, "111 fathoms, off Cape Byron, New South Wales"; Hedley and May, *op. cit.*, 1908, vol. vii., No. 2, p. 111, "100 fathoms, off Cape Pillar."

Taken in 100 fathoms 90 miles west of Eucla, in sponge.

**Siliquaria anguina**, Linnæus.

*Tenagodus anguinus*, Linnæus, Mus. Lud. Ulr., 701, No. 481, 1758.

*Serpula anguina*, Born, Mus. Caes. Vindobon., Test., Tome 18, fig. 15; Gmelin, Sys. Nat. Linn., 1789, vol. vi., p. 3743, "Indian Ocean."

*Siliquaria anguina*, Chenu, Illus. Conch., p. 1, pl. i., figs. 1, 2; Reeve, Conch. Icon, pl. iii., Sp. 7, figs. 7a, 7b, 7c, 7d, 7e; Tryon, Man. Conch., 1886, vol. viii., p. 190, pl. lviii., figs. 23-25; Sowerby, Thes. Conch., vol. v., 1887, p. 165, No. 13, pl. 481 (*Siliquaria* ii.), figs. 11-13.

*Serpula muricata*, Born, Mus. Caes. Vindobon., Test., Tome 18, fig. 16.

*Siliquaria muricata*, Lamarck, Anim. S. Vert. (2nd Edition, Deshayes, etc.), 1838, vol. vi., p. 584, "Indian seas"; Chenu, Illus. Conch., p. 2, pl. ii., figs. 13, 14, "Indian seas and New Holland."

Gmelin, Reeve, Tryon, and Sowerby give *S. muricata* as a synonym of *S. anguina*.

Taken in 100 fathoms 90 miles west of Eucla, several, in a piece of blackish-purple sponge, which stains them somewhat violet. It has the *S. muricata* form, and is easily distinguished from our other two southern Australian species *S. australis* and *S. weldii* by its squamate longitudinal ribs.

**Cypræa thersites**, Gaskoin.

*Cypræa (Aricia) thersites*, Gaskoin, Proc. Zool. Soc., 1848, p. 90: Type locality—"Salt Creek, Yorke Peninsula, South Australia, on clusters of *Zoophytes* at 2 to 3 fathoms."

Dredged alive in 72 fathoms 60 miles west of Eucla, 1; in 100 fathoms 90 miles west of Eucla, 1; in 75 to 120 fathoms 40 miles west of Eucla, 2. This species has hitherto appeared to be of an exceedingly limited *habitat*, being taken only in Gulf St. Vincent and Spencer Gulf. Once I dredged a large living specimen at the mouth of the American Inlet, off Hog Bay, Kangaroo Island. But it has not been recorded



from Victoria, Tasmania, or Western Australia. To meet it in about 100 fathoms in the Great Australian Bight was a surprise. The specimens obtained were all comparatively young. Their outer lip was formed and toothed, and the base was flattened. The youngest is nearly white, with a faint bluish-grey tint, and has two broad darker bands running across the shell from one lateral margin to the other. There are about 25 brown spots on the right margin and 10 on the left. The next more mature specimen has a flatter base, which projects more at both ends, which are faintly tinted with orange; the ground-colour is more bluey-grey, and numerous transverse interrupted streaks of brown cross the shell, more marked on the left side; numerous smaller spots are superadded to those on the right border. The third example is nearly mature, is of a still darker bluish-grey, with much more numerous and darker and larger blackish-purple spots on both margins, especially the left, and with darker brown dashes on the dorsum arranged antero-posteriorly. They differ from specimens found in our gulfs in their much lighter colour. The latter, even when much less mature, long before they show any sign of a formed lip, are of a yellow-orange colour, and are abundantly covered with dark-rusty-brown spots and blotches. The pallor of the deep-sea examples is very striking.

### *Cypræa reevei*, Gray.

*Cypræa reevei*, Gray, Sowerby, Conch. Illus., 1832, *Cypræulæ*, p. 2, No. 15\*, fig. 52: 'Type locality—Garden Island, mouth of the Swan River'; Menke, 1843, Moll. Nov. Holl., p. 29; Tryon, Man. Conch., 1885, vol. vii., p. 166, pl. iii., figs. 24, 25.

Taken in 100 fathoms 90 miles west of Eucla, 5 alive; in 105 fathoms 30 miles west of Eucla, 1 alive. This species is taken in King George Sound on rocks at low tides alive, and it is found alive in 100 fathoms. Most of the examples taken are more pallid than those in-shore, but there are the same pink tips and spire and obsolete transverse darker bands. It seems to have come round from the west, and to have reached South Australia, where it is known to extend as far as Backstairs Passage. From Victoria and Tasmania it is unrecorded.

### *Cypræa pulicaria*, Reeve.

*Cypræa pulicaria*, Reeve, Proc. Zool. Soc., 1845, *hub.* (?); Conch. Icon., 1846, Sp. 84, pl. xvii., fig. 84; Tryon, Man. Conch., 1885, vol. vii., p. 189, pl. xvi., figs. 59, 60.

Taken in 80 fathoms 80 miles west of Eucla, 1 alive; in 100 fathoms 80 miles west, 3 alive; in 100 fathoms 90 miles west, 6 alive. They vary from 17 mm. to 24 mm. in

length, are of a greyish-yellowish or yellowish-brown colour. There may be no dots whatever, or only a few brown dots about the right border, or many scattered all over the surface irregularly, or some of these may be arranged in three transverse rows, or besides other scattered sparse dots, there may be two or three obscure transverse bands of brown blotches. They are narrower and more cylindrical than the *C. piperata*, Solander, though probably only a variant.

***Cypræa umbilicata*, Sowerby ; var. *armeniaca*, n. v.**

Pl. x, figs. 1-3.

1825, *Cypræa umbilicata*, Sowerby, G. B., Catalogue of Shells in collection of Earl of Tankerville. Appendix, p. xxx., No. 2260, pl. iv. and v.: *Type locality* unknown.

1826, *Cypræa umbilicata*, Sowerby, G. B., Zool. Jour., 1826, vol. ii., p. 494.

1828, Wood, Supp. Index, Test., 1828, p. 9, pl. iii., fig. 13, *hab.* unknown.

1828, *Cypræa umbilicata*, Sowerby, Gray, Zool. Jour., vol. iv., p. 77, and Sowerby, G. B., p. 221.

1837, *Cypræa pantherina*, Solander MSS., var. *umbilicata*, Sowerby, Conch. Illus. *Cypræa*, p. 2, No. 5, fig. 169.

1844, *Cypræa tugina*, Lamarck, Deshayes, Anim. S. Vert. (2nd Edition, Deshayes, etc.), vol. x., p. 504.

1845, *Cypræa pantherina*, Lamarck, Reeve, Conch. Icon., pl. iii., Sp. 7.

1848, *Cypræovula umbilicata*, Sowerby, Gray, Proc. Zool. Soc., London, pp. 124, 125.

1867, *Cypræovula umbilicata*, Sowerby, Angas, Proc. Zool. Soc., London, p. 205.

1872, *Cypræovula umbilicata*, Sowerby, Brazier, Proc. Zool. Soc., London, 1872, p. 86.

1880, *Cypræa umbilicata*, Sowerby, Cox, Proc. Linn. Soc., N.S.W., 1879, p. 386.

1880, *Cypræa umbilicata*, Sowerby, Thes. Conch., vol. iv., p. 21, Sp. 61, pl. vii., figs. 42-44.

1883, *Luponia umbilicata*, Sowerby, Brazier, Proc. Linn. Soc., N.S.W., vol. vii., p. 117.

1885, *Cypræa umbilicata*, Sowerby, Tryon, Man. Conch., vol. vii., p. 181.

1898, *Cypræa umbilicata*, Sowerby, Beddome, Proc. Linn. Soc., N.S.W., vol. xxii., 1897, pp. 564-568, pl. xx., figs. 1, 2.

1900, *Cypræa umbilicata*, Sowerby, Pritchard and Gatliff, Proc. Roy. Soc., Victoria, vol. xii. (New Series, part 2, p. 187.

1901, *Cypræovula umbilicata*, Sowerby, Tate and May, Proc. Linn. Soc., N.S.W., vol. xxvi., 1901, p. 374.

***Cypræa umbilicata*, Sowerby**

This species was erected upon a shell in the collection of the Earl of Tankerville, and was described and figured in

the Appendix to the Sale Catalogue of the Earl's collection by G. B. Sowerby, F.L.S., in 1825. Only two specimens were known—the type and one in the cabinet of Mr. Sowerby. The type came into the possession of the British Museum. Its *habitat* was unknown. He remarked its resemblance to *U. tigris*, but in the Zoological Journal of 1826 indicated its diagnostics.

The name *C. umbilicata* had been previously attached to a shell by Solander, which Gray thinks was *C. pyrum*; but as Solander's name was only in manuscript, and was never published, Sowerby's specific name stands.

In 1828 Dr. Gray discussed it, and suggested that as only one specimen was known it might be merely a monstrosity, a deformed *C. tigris*; but if a good species, it should be placed in his newly created genus *Cyprova*.

G. B. Sowerby replied that two specimens were known which were quite alike; this supported the probability of its being a good species, allied rather to *C. pantherina* than to *C. tigris*.

In 1837, however, Mr. Sowerby, in his Conchological Illustrations, registered his species as a variety of *C. pantherina*, Solander MSS., having evidently accepted the suggestion that it was only a variant or a monstrosity of this variable and well-known shell.

Deshayes, in his 2nd Edition of Lamarck's Anim. S. Vert., 1844, enters it among the synonyms of *C. tigrina*, Lamarck; and Reeve, in his Conch. Icon. of 1845, under *C. pantherina*, Lamarck, says "*C. umbilicata* has been acknowledged a monstrosity."

This degradation of the species to the position of a monstrosity was doubtless due to the peculiar deformed appearance of the shell and to the fact that for more than twenty years no other specimens had been found and its *habitat* was still unknown. But in 1848 Mr. Roland Gunn wrote to Dr. Gray about a collection of cowries he had found on "the east shore of Barren Island, one of Hunter's islands, north-west of Van Diemen Land," and he sent one fine specimen to the British Museum. This Dr. Gray recognized as *C. umbilicata*, Sowerby, and placed definitely among his *Cyprova* as "the giant of the genus," removed the reproach of monstrosity from it, and established it as a true and very remarkable species, the home of which had at last been discovered. It immediately leaped into notoriety and became valuable, for the second specimen sent to England by Mr. Gunn realized the handsome sum of £30; whereas in my Tankerville Catalogue, in which have been written the prices

paid at the sale of his shells, the sum of £3 3s. is entered against *C. umbilicata*, Sowerby.

Angas in 1867 recorded the dredging, in deep water 2 miles off the coast of New South Wales, a little south of Wollongong, of several living specimens, somewhat smaller and paler in colour than the ordinary Tasmanian examples.

Sowerby in his Thesaurus gives figures of Miss Saul's specimen, which is possibly the before-mentioned individual, offered to her by Mr. Gunn for £30, and which subsequently realized that sum: and also of one of those mentioned by Mr. Angas as being dredged by Admiral Loring off Wollongong.

Dr Cox in 1880 created a variety, *alba*, for a shell obtained at Circular Head, Tasmania, pure white, and quite devoid of all the usual characteristic spots and colouration.

John Brazier in 1883 recorded typical examples found by Mr. Bailey at Cape Schanck and Portland, on the Victorian coast.

C. E. Beddome, in an exhaustive note, refers to an individual found by Dr. A. E. Cox at Port Stephens, New South Wales, only 2½ in. long, lighter in colour than the Tasmanian shells, covered with light chestnut spots, base white, but not so highly enamelled as the southern forms found here (in Tasmania). He reproduces it (fig. 2, pl. xx.).

When out in the Federal trawler "Endeavour" in March, 1912, three large cowries, with a deep umbilicus, were obtained. Two of them were immature and very slightly coloured, but the third was mature, and resembled somewhat *Cypræa umbilicata*, Sowerby. I have regarded it as a variety of this species, and named it *Cypræa armeniaca* (from *armeniaca*, an apricot), because of the beautiful apricot-yellow colour of its base. Should other examples be found and establish its right to a specific distinction its name will stand, as I know of no other species so called.

***Cypræa umbilicata*, Sowerby; var *armeniaca*, n. r.**

Shell solid, globular, very smooth and glazed. It has a well-marked umbilicus in which the volutions are plain; obsolete, narrow, flat, spiral bands occur on the right side of the dorsum. The base is convex. The aperture moderately wide, slightly dilated anteriorly, and then narrowing into a canal 8 mm. long; posteriorly very curved round the posterior part of the whorl and turning up behind and ending in a well-marked notch. The outer lip is bent in at a right angle, slightly convexly flattened, thick, with 38 rather small teeth,

almost confined to the inner edge. The teeth along the inner-margin are 29, narrow and very short, ending rather abruptly at their inner ends and rapidly becoming obsolete at their outer. The base is prolonged, thickened, and expanded on each side in front, especially on the left, and also at the back, where there is a considerable thickening round the notch, which is projected by it 8 mm. from the umbilicus, and some distance to the left of the centre of the spire.

The colour is whitish, but except along the line of union of the mantle-folds and just above the margins the white is obscured by clouds and blotches of light yellowish-brown and scattered chestnut spots, an irregular line of which bounds the upper edge of the right mantle lobe. The top of the anterior beak is painted blackish-brown, as is also the right side of the callus of the outer lip behind at its junction with the body-whorl. The whole of the base and outer lip is of a rich apricot colour, deepest outside the columellar teeth, which it tinges, and on the callus forming the anterior and posterior projections of the inner lip; it extends to both lateral margins and covers the dorsal surface of the anterior beak and the callus round the posterior notch. The left side of the body-whorl is of a delicate faint lilac tint, which fades insensibly into the yellow, white, and chestnut around. The interior is a creamy-white.

The animal is white, but the margin of its mouth is of a deep apricot colour, as is also the somewhat expanded semi-circular anterior end of the foot. The tentacles, about half an inch long, are of a paler tint, and so are their bases, which are about one-third as long and twice as stout, and bear the black eyes on their summits, outside the tentacles.

*Dimensions*.—Length, 3·9 in.; breadth, 2·5 in.; height, 2·2 in.

*Locality*.—100 fathoms, Great Australian Bight, 60 miles from shore, 80 miles west of Eucla, with 2 immature shells. The trawl worked over the sea bottom from 75 to 120 fathoms, so that they might have come from any intermediate depth.

The youngest example, taken at 80 fathoms in the Great Australian Bight 80 miles west of Eucla, is light and papery. It is 3 in. long by 2·2 in. wide and 1·9 in. high. Its outer lip is formed and bent in, and has 33 teeth, and there are 28 on the inner side of the aperture. The posterior notch touches the last whorl in the sunken spire, the anterior canal is smooth for 6 mm. beyond the teeth. There are faint axial growth-lines and numerous spiral flat bands. The ground-colour is white with a spiral disposition of brown smudges and streaks, which on the left side of the shell are united by a lighter

general brownish colouring. The base is of a faint apricot tint, which also tinges the columellar teeth. Near the base is a band of deep brown spots of varying size, which are found also on the base of the body-whorl; the anterior end and the lower third of the depressed spire and the adjacent part of the outer lip are of a dark walnut-brown.

A slightly older specimen, from 100 fathoms, is 3·5 in. long, 2·5 in. wide, and 2·2 in. high, has fewer brown spirals, with 36 outer and 26 inner and 4 intermediate teeth, the outer lip is rather more thickened, and the flat dorsal spirals are slightly more conspicuous.

I have had five examples of the Tasmanian form to compare it with, as well as the figures given by all the above-mentioned authors. Mine differs in shape, being more globular, higher, and wider, not only relatively, but absolutely. Mr. May kindly lent me two very diverse examples, which respectively measured 4·4, 2·3, 1·9 in. and 3·4, 2·1, 1·8 in. in length, breadth, and height, whereas mine is 3·9, 2·5, 2·2 in. Allowing, therefore, for the greater length of the anterior and posterior prolongations in Mr. May's large specimen, which is probably a senile change, mine is still more globular. It is interesting to notice the greater similarity between my specimen and the type, whose dimensions are: Length, 3·8 in.; and breadth, 2·3 in., which is different from that of most specimens. Sowerby does not give the height of his shell, nor a figure in profile, and it is difficult to estimate this from his figure, but it seems less elevated than mine. The concave depression on the under-surface of the forward projection is much less in mine, and the posterior curve of the aperture, its upward bending and the twist to the left are more marked. The colour is very different. The fairly uniform peppering with dark spots, the white base, the brown wide blotch over the middle third of the base of the body-whorl are wanting in mine, while the apricot base and the lilac side are absent from the typical shells.

It may be that the shape is due to its *habitat* in the quiet waters of 100 fathoms, and that though mature it is not senile, and its colouring to its having been taken alive instead of being washed up and partially bleached on the shore. But we will hope other specimens may be secured which will determine its right to be called a good species.

Type in my collection.

### **Trivia australis, Lamarck.**

*Cypræa australis*, Lamarck, Anim. S. Vert., 1822, vol. vii., p. 404, and 1844 (Edition Deshayes), vol. x., p. 545, "The seas of New Holland" (M. Macleay); Sowerby, Conch. Illus., 1832,

fig. 29, p. 12 (1841), No. 112, "New South Wales"; Quoy and Gaimard, 1834, Voy. "Astrolabe," Zool., vol. iii., pl. xlviii., figs. 19-26; Menke, 1843, Moll. Nov. Holl., p. 30, *Cypraea* (*Trivia*), "Western shore of Australia"; Kiener, Coq. Viv., 1845, p. 138, Sp. 125, pl. xlviii., 2 bis; Reeve, Conch. Icon., 1846, vol. iii., pl. xxiv., fig. 138; Angas, Proc. Zool. Soc., London, 1867, p. 206; also 1878, p. 867, "Fowler Bay and Cape Northumberland," South Australia; Sowerby, *Cypraea* (*Trivia*), 1870, Thes. Conch., vol. iv., p. 45, pl. 325, figs. 439, 440 (*Cypraea*, pl. xxxiv.); Brazier, Proc. Zool. Soc., London, 1872, p. 86; Weinkauff, 1881, Conch. Cab. (Ed. Küster), Band. v., Abt. iii., p. 142, pl. xlix, figs. 14, 15; Tryon (*Trivia*), 1885, Man. Conch., vol. vii., p. 206, pl. xxiii., figs. 53, 54; Brazier, Proc. Linn. Soc., N.S.W., vol. ix., p. 29; Beddome, 1898 (*Trivia*), Proc. Linn. Soc., N.S.W., vol. xxiii., pl. xxi., fig. 19; Pritchard and Gatliff (1899), 1900, vol. xii. (New Series), p. 187, Victorian coast; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 374, Tasmania; Hedley and May, Records Austr. Mus., 1908, vol. vii., p. 111, No. 2, "100 fathoms, off Cape Pillar."

Taken in 80 fathoms 80 miles west of Eucla, 2 alive, without dorsal colour-blotches.

### ***Ovula philippinarum*, Sowerby.**

*Ovula philippinarum*, Sowerby, Proc. Zool. Soc., London, 1848, p. 136; also Thes. Conch., 1855, vol. ii., p. 481, Sp. 44, pl. c., figs. 57, 58, "Philippines"; Reeve, Conch. Icon., 1865, Sp. 46, pl. x., figs. 46a, 46b; Tryon, Man. Conch., 1885, vol. vii., p. 252, pl. iv., figs. 100-9. He gives among its synonyms *O. angasi*, A. Adams (from Port Curtis, Australia), etc.

One example, dredged in 72 fathoms 40 miles west of Eucla, 18.5 mm. in length, not quite so solid as the figures in the above plates seem to show.

### ***Tonna variegata*, Lamarck.**

*Dolium variegatum*, Lamarck, 1822, Anim. S. Vert., vol. vii., p. 261; also 1844 (Edition Deshayes), vol. x., p. 143, No. 6, "The seas of New Holland, in the Bay of Dogs"; Angas, Proc. Zool. Soc., 1867, p. 197, recorded for New South Wales; also by Hedley, Mem. Austr. Mus., 1903, vol. iv., p. 341; Tryon, Man. Conch., 1885, vol. vii., p. 262, pl. iii., fig. 13.

*Tonna variegata*, Lamarck, Hedley, Austr. Assoc. Adv. Science, 1909, p. 361, recorded for Queensland.

A fresh shell, 85 mm. by 65 mm., was taken in 100 fathoms 80 miles west of Eucla. This is the easterly limit on the southern Australian coast for the species to my knowledge. Its absence from South Australian, Victorian, and Tasmanian waters makes it probable it has come from the north round Cape Leuwin.

### ***Cassis fimbriata*, Quoy and Gaimard.**

*Cassis fimbriata*, Quoy and Gaimard, Voy. "Astrolabe," 1833, Zool., vol. ii., p. 596, pl. xliii., figs. 7, 8; Angas, Proc. Zool.

Soc., 1865, recorded for South Australia; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1900, vol. xii. (New Series), part 2, p. 188, recorded for Victoria.

One individual, 83 mm. long by 52 mm. broad and 46 mm. high, with three spiral rows of tubercles on the body-whorl, was taken alive in 100 fathoms, quite typical in form and colour, and a second one dead.

### **Cassidea adcocki**, Sowerby.

*Cassis adcocki*, Sowerby, Proc. Mal. Soc., 1896, vol. ii., p. 14, text figure: *Type locality*—Yankalilla Bay, South Australia; Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1912 (New Series), part 1, p. 170, recorded for Bass Straits.

One example was taken dead in 100 fathoms 90 miles west of Eucla.

### **Cassidea pyrum**, Lamarck.

*Cassis pyrum*, Lamarck, Anim. S. Vert., 1844 (Edition Deshayes), vol. x., p. 33, 'New Holland'; Angas, Proc. Roy. Soc., 1867, p. 197, recorded for New South Wales; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1900, vol. xii. (New Series), part 2, p. 189; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 373 (*Semicassis*), recorded for Tasmania.

*Cassis nivea*, Brazier, Proc. Zool. Soc., 1872, p. 616, pl. xliv., fig. 1.

*Cassis tumida*, Petterd, Proc. Roy. Soc., Tasmania, 1886 (1885), p. 321.

*Cassis thomsoni*, Brazier, Proc. Linn. Soc., N.S.W., 1875, vol. i., p. 8; Hedley (*Cassidea pyrum*, Lamarck, var. *thomsoni*, Brazier), Mem. Austr. Mus., 1903, vol. iv., part 6, p. 341, pl. xxxv., figs. 2, 3.

Dredged in 100 fathoms 90 miles west of Eucla, 4; in 75 to 120 fathoms 120 miles west of Eucla, 1; in 95 fathoms 90 miles west of Eucla, 3. All were well coronated, with moderately exserted spires and with more or less marked axial plicæ on the inflation of the body-whorl, a little below the coronation. The colour when fresh was a pink-flesh tint, with a blackish-purple on the varix of the canal, and about seven blotches of black-purple on the outside of the recurved labrum, fading away towards the dorsum as vanishing spiral flames. Some have two spiral bands of orange blotches on the body-whorl.

One quite fresh shell was taken in 140 fathoms, 34 mm. 22.5 mm., without angle or tubercles or plicæ, with a thickened reflected lip, with seven purplish-black spots on it, a micromorph of the variety found to the east of Bass Straits.

### **Cassidea semigranosa**, Lamarck.

*Cassis semigranosa*, Lamarck, 1822, Anim. S. Vert., vol. vii., p. 228, No. 23: *Type locality*—"The seas of New Holland";



Angas, Proc. Zool. Soc., 1865, p. 168 (*Semicassis*), recorded for South Australia; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1900, vol. xii. (New Series), part 2, p. 190, recorded for Victoria; Tate and May, 1901, Proc. Linn. Soc., N.S.W., vol. xxvi., p. 373 (*Semicassis*), "South and east coasts of Tasmania."

One dead shell, taken in 80 fathoms 80 miles west of Eucla.

### ***Ficus tessellatus*, Kobelt.**

*Ficula tessellata*, Kobelt, Conch. Cab. (Ed. Küster), 1881, Band. iii., Abt. 3.B., p. 12, Sp. 6, Taf. ii., fig. 3: *Type locality*—Australia.

*Pyrula tessellata*, Kobelt, Tryon, Man. Conch., 1885, vol. vii., p. 267, pl. v., fig. 31, Rosemary Island, Australia.

One fragment, taken in 100 fathoms 90 miles west of Eucla. This is a new genus for the southern coast of Australia.

### ***Cymatium rubicundum*, Perry.**

*Septa rubicunda*, Perry, 1811, pl. xiv., fig. 4; Gatliff, Vict. Naturalist, 1902, vol. xix., No. 5, p. 76; (*Lotorium*) Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1905, vol. xviii. (New Series), part 2, p. 41; (*Septa*) Gatliff and Gabriel, Proc. Roy. Soc., Victoria, 1908; (*Cymatium*) Hedley, 1909, Austr. Assoc. Adv. Sci., p. 360, "Queensland."

*Triton australe*, Lamarek, Anim. S. Vert. (Edition Deshayes), 1843, vol. ix., p. 625.

*Triton nodiferus*, Lamarek, Anim. S. Vert. (Edition Deshayes), 1843, vol. ix., p. 624.

*Triton saulia*, Reeve, Conch. Icon., 1844, pl. v., fig. 17, "Philippines."

Examples were taken along the 100-fathom line. Three were only 40 mm. and 30 mm. in length. Each of these retained the protoconch, which was conical, and consisted of four quite smooth, sloping, slightly conical whorls. The extreme tip, however, in each example was absent. Three large ones were obtained alive up to 21 cm. long by 11 cm. broad, including the everted lip. These were somewhat more elongate and narrow than those found on the shore at Albany and Wedge Island and less solid, and were less deeply coloured than those taken on the beach on the west coast of Australia.

### ***Cymatium verrucosum*, Reeve.**

*Triton verrucosus*, Reeve, Proc. Zool. Soc., London, 1844, p. 118, *hab.* (P); Conch. Icon., 1844, vol. ii., pl. xvii., fig. 71; Kobelt, Conch. Cab. (Ed. Küster), 1878, Band. iii., Abt. 2, p. 188, pl. liii., figs. 6, 7; Tryon, Man. Conch., 1881, vol. iii., p. 24, pl. xiii., fig. 117; Pritchard and Gatliff, *Lotorium verrucosum*, Reeve, Proc. Roy. Soc., Victoria, 1898 (1897), vol. x. (New Series), p. 266, recorded for Victoria; Tate and May, *Lampusia*, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 355, for Tasmania.

*Triton quoyi*, Reeve, Proc. Zool. Soc., London, 1844, p. 118; Conch. Icon., 1844, vol. ii., pl. xix., fig. 93.

Taken in 75 fathoms 80 miles, and in 100 fathoms 90 miles, west of Eucla. It has the ordinary characters of the *T. quoyi* form.

### ***Cymatium vespaceum*, Lamarck.**

*Triton respaceum*, Lamarck, 1822, also Lamarck, Anim. S. Vert. (Edition Deshayes, etc.), 1843, vol. ix., p. 636, *hab.* (?), 14 lines long; Kiener, Spec. Coq. Viv., vol. vii., 1842, p. 18, No. 13, pl. iii., fig. 2, "Indian Ocean"; Menke, Moll. Nov. Holl., 1843, p. 25, "West coast of Australia"; Tryon, Man. Conch., 1881, vol. iii., p. 22, pl. xii., figs. 94-100; Hedley (*Cymatium*), Austr. Assoc. Adv. Sci., 1909, p. 360, "Queensland."

Two examples, taken in 100 fathoms 90 miles west of Eucla, 23.5 mm. long and 20 mm. broad.

### ***Gyrineum ranelloides*, Reeve.**

*Triton ranelloides*, Reeve, Proc. Zool. Soc., 1844, p. 111; Conch. Icon., 1844, No. 10, pl. iii., figs. 10a, 10b, *hab.* "Matnog, Province of Albay, Island of Luzon, Philippines (found on the reefs), Cuming"; Tryon, Man. Conch., 1881, vol. iii., p. 267, gives it as a synonym of *Ranella cruentata*, Sowerby.

*Gyrineum ranelloides*, Reeve, Hedley, Austr. Assoc. Adv. Sci., 1909, p. 361, "Queensland."

One living specimen was dredged in 101 fathoms 80 miles west of Eucla. The operculum is shown in pl. xvi., fig. 7, and the radula in pl. xvi., fig. 6. The shell is 50 mm. long by 24 mm. at its widest part, including the varix, with a shortly conical protoconch of five whorls. The first three are very depressed, scarcely rounded; the last two are convex, and rather rapidly increasing. The first four have two erect, sharp, hair-like spiral threads, at about equal distances from the sutures and each other, and numerous though not closely crowded, oblique similar axial threads. These gradually vanish towards the beginning of the last whorl; this ends abruptly where the ordinary sculpture of the spire-whorls begins. This consists of a row of large tubercles on the median angle, three rows of tiny tubercles above these and one below. On the body-whorl the last become successively larger, and another row succeeds them further forward, and several rows of large granules are intercalated. The tubercles are deeper yellowish-brown than the ground-colour, and there are stray axial flames of darker brown and articulated spirals of broken lines or tiny spots of brown. The reflected lip just beyond the varix is very daintily spotted on its inner margin with dark-brown, which clouds also the upper part of the inner lip between its white plicæ. The lower half of the columella is white, bordered above by the yellow of the back of the pre-

ceding snout. The round gutter at the back of the aperture is very marked. The varices do not run continuously from spire to spire as in *Ranella*, but stand one-fourth of the circumference behind that in the spire below.

An identical specimen was sent to me some years ago as from Japan by Mr. Sowerby under the name *Triton ranelloides*, Reeve.

### **Argobuccinum australasia**, Perry.

*Biplex australasia*, Perry, 1811, Conchology, pl. iv., figs. 2, 4, "New Holland and Van Diemen's Land."

*Ranella leucostoma*, Lamarck, 1822, Anim. S. Vert., vol. vii., p. 150.

Dredged in 101 fathoms 80 miles west of Eucla, 1 immature, 50 mm. by 27 mm., with a conical protoconch of four sloping convex whorls, the minute extreme apex appears to be absent; colour of shell, light bluish-grey, covered with a thin epidermis, like coarse muslin, with a minute erect hair at each intersection. Aperture quite white. Also, a mature shell 90 mm. by 43 mm., solid, and lighter in colour than those from Tasmania.

### **Nassaria torri**, Verco. Pl. xiii., figs 3, 4.

*Gominella torri*, Verco, Trans. Roy. Soc., S.A., 1909, vol. xxxiii., p. 271, pl. xxi., figs. 10, 11.

The species was founded on several examples collected on St. Francis Island thrown up among the rocks, but none of them were full grown, and all of them were more or less rolled and damaged. But on May 27, 1912, the Federal trawler "Endeavour" obtained a perfect specimen from a depth varying from 77 to 105 fathoms, about 40 miles west of the meridian of Eucla. It was inhabited by a hermit crab. It has nine whorls. The protoconch, comprising one and a quarter turns, is blunt, slightly excentric and smooth. The suture ascends for about a sixth of the circumference on the last whorl, and forms with a curved callosity on the inner lip, a narrow gutter at the back of the aperture.

The aperture is obliquely axially ovate, narrowed posteriorly to a gutter and anteriorly to a short, wide, oblique canal. The outer lip is thin, simple, uniformly convex, slightly reflected, smooth within. The inner lip is an expanded glaze on the body-whorl, thickened internally into a curved callus, extending slightly above the back of the aperture at the suture; anteriorly the labium is thick, detached from the base of the whorl, and carried forward over the very valid varix of the canal to form a false, well-marked umbilicus, and to join almost at a right angle with the left margin of the

canal, which is dorsally curved to run almost vertically for about half an inch. The varix of the notch projects as a very faint oblique prominence on the columella. The columella is sigmoidally concave above and convex below.

The bent canal removes it from the genus *Cominella* and separates it from *Phos* and places it in *Nassaria*. If this location prove correct it is a gigantic member of the genus, measuring 69 mm. in length by 29 mm. in breadth. A second example, not full grown and not in very good condition, was taken in 100 fathoms 90 miles west of Eucla

### ***Siphonalia dilatata*, Quoy and Gaimard**

*Fusus dilatatus*, Quoy and Gaimard, 1833, Voy. "Astrolabe," Zool., vol. ii., p. 498, pl. xxxiv., figs. 15, 16; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1898 (1897), vol. x. (New Series), part 2, p. 272.

*Fusus tasmaniensis*, Adams and Angas, 1863, Proc. Zool. Soc., London, p. 421, pl. xxxvii., fig. 1.

*Siphonalia maxima*, Tryon, 1881, Man. Conch., vol. iii., p. 135, pl. liv., fig. 335.

*Siphonalia oligostira*, Tate, Trans. Roy. Soc., S.A., 1891, vol. xiv., p. 258, pl. xi., fig. 6.

Taken in 105 fathoms 30 miles west of Eucla, with marked angulation, valid sharp transverse coronating tubercles, with numerous crowded fine deep-brown spiral cords, the colour deepest in a rather broad band revolving over the middle of the body-whorl, the interior a beautiful vivid salmon-tint or white, two examples.

Taken in 100 fathoms 90 miles west of Eucla, 2 much longer and narrower examples, one with a more rounded shoulder, with rounder and more pliciform tubercles, fewer broader spiral cords, pure white both outside and in; the second from this station comes midway between this and the first two in its colouring and sculpture. One immature, 48 mm long, taken in 72 fathoms 40 miles west of Eucla.

### ***Fusus novæ hollandiæ*, Reeve.**

*Fusus novæ hollandiæ*, Reeve, Conch. Icon., 1847, vol. iv., p. 197, pl. xviii., fig. 70; Angas, Proc. Zool. Soc., 1877, p. 179, recorded for New South Wales; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., recorded for Tasmania; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1898, vol. x. (New Series), part 2, p. 269, recorded for Victoria; in vol. xviii., 1906, p. 43, they state that the type is in the National Museum, Victoria.

One example was dredged in 100 fathoms 90 miles west of Eucla, with the mouth somewhat broken, 67 mm. long by 22 mm. wide, spire 24 mm. long. Its shoulder is median and sharply angled, with nine pliciform axial ribs, more

marked below the angle than above, much narrower than their interspaces; the four spiral threads above the shoulder very fine, those below it very fine but slightly larger: those on the body-whorl finer than in Tasmanian specimens. A bright reddish-brown spot between the costæ at the angle.

### **Fasciolaria australasia, Perry.**

*Pyrula australasia*, Perry, 1811, Conchology, pl. liv., fig. 4, "New Holland and Van Diemen's Land."

*Fasciolaria coronata*, Lamarck, 1822, Anim. S. Vert, vol. vii., p. 120.

One individual, dredged in 72 fathoms 60 miles west of Eucla, is rather a marked variant. It is 143 mm. long by 55 mm. at its widest part. The protoconch of two rounded smooth whorls is less eccentric and pulloid than usual. The spire is unusually long, 62 mm., of six whorls, very sharply shouldered just above the middle and markedly contracted at the sutures, with about eleven pliciform tubercles with sharp transverse summits, corded with a spiral thread. A very thin horny epidermis. Colour, first three spire-whorls brownish, all the rest quite white; interior pure white. Another individual, taken in 100 fathoms 80 miles west of Eucla, was, as to protoconch, shape, and colouration, one of the common coronated forms.

### **Scaphella undulata, Lamarck.**

*Voluta undulata*, Lamarck, Ann. du Mus. Hist. Nat., vol. v. 1804, p. 157, pl. xii., figs. 1a, 1b.

Four examples, taken 80 miles and 90 miles west of Eucla from 72 to 105 fathoms, all immature and dead and quite typical.

### **Scaphella fulgetrum, Sowerby. Pl. xi. and xii.**

*Voluta fulgetrum*, Sowerby, Tankerville Catalogue, 1825, p. 81, No. 2149; Appendix, p. xxviii., pl. iv., v.: *Type locality* unknown: Broderip, Zool. Jour., 1826, vol. ii., p. 35; Wood, Index. Test. Supp., 1828, p. 59, pl. iii., fig. 3; Anim. S. Vert., 1844 (2nd Edition, Deshayes, etc.), vol. x., p. 414; Sowerby, Thes. Conch., 1847, vol. i., p. 207, Sp. 35, pl. xlviii., figs. 33, 34; Reeve, Conch. Icon., 1849, pl. vi., figs. 13a, 13b; Chenu, Man. de Conch., 1859, vol. i., p. 191, fig. 973; W. F. Petterd, Journ. Conch., 1879, p. 344; Tryon, Man. Conch., 1882, vol. iv., p. 96, pl. xxviii., figs. 104, 105.

This species was described by G. B. Sowerby, sen., in the Sale Catalogue of the Earl of Tankerville's collection—the only specimen he had ever seen. It was a fine individual, and two excellent full-sized coloured figures are given of it. Its *habitat* was unknown. Broderip reproduced the description of it about a year later in the Zool. Jour., attributing

it to Sowerby. In 1849 Reeve says, "It was first described by Mr. Broderip from a specimen of rather large size in the celebrated Tankerville Collection, now in the British Museum," and places Broderip's name before Sowerby's in his references. This strange mistake evidently misled Peterd, who cites Broderip as the author of the species; but later writers correctly give Sowerby his due. Reeve is the first to give the *habitat* of the species, namely, South Australia. In my copy of the Tankerville Catalogue the price against the type specimen is £31 10s.

*Variations*.—It is very variable; one from Adcock's collection, not quite mature, is 7 in. long by 177 cm. by 8.3 cm. The type is described as 6 in. by 3 in. Mr. Mathews tells me in a letter that the largest he has seen was 8 in. by 3½ in., taken on Troubridge Island. But a mature shell, with ascending suture and fully-formed lip, may be only 3 in. by 1.55 in.

Another example is 4.3 in. by 1.7 in., so that if it were 6 in. long it would be only 2.4 wide—more than ½ in. less in diameter than the type. The shoulder, too, may be more marked than in the type, which is rather high-shouldered, and may be somewhat more concave below the suture. When senile the inner lip may have a thick axial pad of callus extending a full inch beyond the aperture. The glaze of the inner lip not only extends very far laterally over the body-whorl, but towards the spire for half an inch or more above the suture, and in shells with rusty-brown staining this covers the stain over and leaves a broad, wavy, whitish band above the suture throughout the last spire-whorl.

Tryon says, "*V. fulgetrum*, in fact, is intermediate between *V. fusiformis* and *V. papillosa*, and very probably the three are merely diverse forms of one species." I think the three species are distinct, the protoconch of *S. fulgetrum* is a sufficient diagnostic from either of the other species.

Sowerby, in the *Thes. Conch.*, refers to one variety (*S. dictua*, n. var., Verco, *Trans. Roy. Soc., S.A.*, 1909, vol. xxxiii., p. 274, pl. xxi., fig. 7) which has only a delicate reticulate lace-like colouration, and a second which has two rows of chestnut spots on the last volution. But the colour variations are quite numerous.

1. There is the typical shell with the axial zigzag brown dashes from which the shell derives its name. It will be noticed these tend to have two spiral rows of blotches, one just below the shoulder and the other over the lower part of the body-whorl. The blotches are roughly crescentic or arrow-headed, with their concavity towards the outer lip. At the suture the markings are flame-like.

2. There may be two spirals of large crescentic or arrow-headed spots, with flames at the suture; var. *lunulishigata*.

3. These may be reduced to two spirals of small spots the size of peppercorns; var. *punctuligata*.

4. There may be no spots except a few small ones on the first and second spire-whorls, the surface being more or less deeply and densely reticulated with brown; var. *dictua*, Verco.

5. The axial lightning zigzags may be crossed by two continuous deep purple-brown bands, one below the shoulder, the other over the lower part of the volution; var. *connectens*.

6. The only colour ornament may be these two bands and some small flames at the suture, all the axial markings being absent; var. *bicincta*.

7. The subsutural flames may unite to form a third spiral band; var. *tricincta*.

8. Only the lower spiral band may be present, but this quite valid; var. *unicincta*.

9. There may be no colour-markings, the shell being pure white; var. *alba*.

I have had several of these colour varieties reproduced in pl. xi. and xii.

The *habitat* of the species is very restricted. It has been taken in both Gulf St. Vincent and Spencer Gulf, and at some points is a fairly common shell. Mr. Mathews says the blacks tell him the animal lives on sandbanks nine or ten chains from the shore, which are covered by about 18 in. of water at low spring tide. He has taken them crawling ashore. It has been collected as far to the east as Kingston, in Lacepede Bay. I found none on the beaches from Sceales Bay to Point Sinclair, nor on St. Francis Island nor at Esperance, Hopetoun, King George Sound, nor on the west coast of Australia. It has not been recorded from Victoria.

Its bathymetrical distribution is interesting. Taken alive, of large size and beautifully painted, in all its varieties in the shallow water of the gulfs, and with only the lace-like reticulations, from the lobster-pots at Port Victor, and in 75 to 120 fathoms of water from 40 to 120 miles west of Eucla, 9 examples. The shells from these greater depths were all dead, mostly the home of hermit crabs, and all had the faint reticulated ornament except two, which showed the single deep band; none had the axial lightning markings.

#### ***Caphella verconis*, Tate.**

*Voluta verconis*, Tate, Trans. Roy. Soc., S.A., 1892, vol. xv., p. 125, pl. i., fig. 5: *Type locality*—Gulf St. Vincent (Verco).

Taken in 75 fathoms 80 miles west of Eucla, 1 dead, immature; in 80 fathoms same locality, 1 dead, mature; in 100 fathoms 90 miles west of Eucla, 3 dead, immature.

**Scaphella translucida**, Verco

*Voluta translucida*, Verco, Trans. Roy. Soc., S.A., 1896, vol. xx, p. 217, pl. vi., figs. 4, 4a.

In 100 fathoms 90 miles west of Eucla a large lump of coral was taken, and in a cavity of this when chopped open lay a perfect specimen dead, with a deciduous thin white smooth epidermis, 35 mm. long by 14 mm. broad, somewhat smaller than the type.

**Scaphella dannevigii**, n. sp. Pl. xiii. figs. 1, 2.

A large, thin, brown, polished, elliptical shell. Protoconch absent, the line of separation thin and jagged; the exposed pillar very oblique, thick, smooth, and rounded, concealing the projecting hemispherical apex of the shell. Whorls three, shouldered below the suture, at the upper fourth of the intersutural space. Shoulder coronated with tubercles, eleven on a whorl, none on the first whorl, the earlier tubercles pointed, the later becoming broad until about half as wide as the interspaces, shortly pliciform, but expanding, and vanishing before reaching the lower suture. Whorls sloping, concavely sub-graduate above the shoulder, sloping slightly convex below. Suture distinct, minutely channelled. Body-whorl large, oval, narrowed anteriorly. Aperture axially narrowly elliptical. Inner lip a thin extensive glaze over the whorl; outer lip immature, thin, uniformly convex, and (as the growth-lines show) curving roundly to a wide, rather shallow, anterior notch. Columella subconcave, three very oblique plaits, the lowest forming the margin of the canal.

*Sculpture*.—There are crowded, fine, wavy, spiral liræ, about twenty above the shoulder, less valid over this and soon becoming obsolete below it. Accremental striæ granulate these and become ruder towards the aperture. Colour, dark chestnut-brown, obscurely minutely spirally crowdedly flecked with white, with scattered darker-brown blotches, the tips of the tubercles a deep blackish-brown. A narrow creamy band, distinct on its under margin, indistinct along its upper border, starts just within the back of the aperture and winds round the body-whorl to the middle of the outer lip.

*Dimensions*.—Length, 16.3 cm., of the aperture 11.3 cm.; width, 8.33 cm., of the aperture 4.77 cm.; diameter of the protoconchal base, 18 mm.



*Locality*.—Type specimen taken in the trawl at 105 to 77 fathoms 90 miles west of the meridian of Eucla.

In 1896 off Newland Head, outside Backstairs Passage, I dredged a dilapidated broken specimen lacking the whole of its last whorl, but measuring 23.5 cm. in length, so that in life it must have been a very large shell. No others were taken by me till I secured the type and eight other examples from the material brought up by the trawl of the "Endeavour" in water ranging from 75 to 105 fathoms, and extending from 40 to 120 miles west of Eucla.

The protoconch was absent from every example. Apparently it is normally deciduous, and must be shed early, as it is absent from a well-preserved specimen 11 cm. long. It must be large, and probably resembles that of *S. mamilla*, which, however, is almost always intact. The whitish band may be centrally well marked and fade away at both margins.

The species is named after Mr. Dannevig, the Commonwealth Director of Fisheries, to whom I was indebted for much help in securing the material obtained during my short voyage on the "Endeavour."

Type in my collection.

***Scaphella roadnightæ*, McCoy. Pl. xvi., figs. 1, 2.**

*Voluta roadnightæ*, McCoy, Ann. Mag. Nat. Hist., 1881, vol. viii., 5th Series, p. 89, pl. vii., figs. 1, 2: *Type locality*—Ninety-mile Beach, Gippsland, Victoria; Tryon, Man. Conch., 1882, vol. iv., p. 96, pl. xxx., fig. 128; Sowerby, Thes. Conch., 1887, p. 298, Sp. 78, pl. 573 (*Voluta*, pl. xiv.), fig. 143; Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1897, vol. x. (New Series), part 2, p. 282, "Portland (Nat. Mus.)"; A. Kenyon, Proc. Mal. Soc., London, 1899, p. 267; Baldwin-Spencer, Proc. Mal. Soc., London, 1901, vol. iv., p. 184; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., part 3, p. 360, Maria Island (May), east coast, near Swansea (Mrs. Irvine), Tasmania; Pritchard and Gatliff, *op. cit.*, 1906 (1905), vol. xviii., part 2, p. 45.

This species was found by Baron von Mueller when on a visit to the Gippsland Lake District at his hotel, where it was in use to prop open his bedroom window. It had been found on the Ninety-mile Beach by Mrs. Roadnight, his landlord's mother, after whom it is named. It was given by Mueller to Sir Frederick McCoy, who described it in 1881. In 1899 some seven specimens were known, two of them from the eastern coast of Tasmania. Later, several were obtained from lobster-pots on the Victorian coast, and Mr. Bastow kindly sent me one. Mr. Dannevig, the Director of Fisheries, tells me he has taken several specimens when trawling off the coasts of Victoria and Tasmania, east of Bass Strait, all dead; and occasionally off the South Australian coast, but the first living examples were brought up from about 100 fathoms

some 40 miles west of Eucla. They were of medium size, mature, and almost destitute of the zigzag colour-markings. When the trawler was in the Great Australian Bight in 1912 several examples were taken along the 100-fathom line in various stages of preservation. All were inhabited by hermit crabs but one; from this a radula was obtained. From the material thus provided the following information is supplied:—The shell when mature may measure only 4 in. long by  $2\frac{1}{2}$  in. broad, or it may reach 9 in. by  $4\frac{3}{4}$  in. One example is 7 in. by  $4\frac{1}{2}$  in., proportionately much more ventricose, with a shorter spire, though with the same number of whorls. The protoconch is very conspicuous and is never absent, which is remarkable, since fully three-fourths of a large hemisphere projects. It is set obliquely, so that the nuclear spheroid has its flattened pole on one side. The initial point is deep blackish-brown, and this colour runs along the nuclear suture, and gradually spreads and fades out. There is no defined inner lip, except in one example, a micromorph, which has a detectible glaze spreading over the base of the body-whorl. In mature shells the outer lip ascends well and rapidly at the suture for a full inch in larger examples, and is here markedly everted, and the whole of the outer lip is somewhat curved out. There is a well-marked anterior notch  $\frac{3}{4}$  in. deep by 1 in. wide, and the low wide rounded varix of the notch winding round to the upper plait on the columella forms a low furrow, which in senile shells become filled up and even convex. The plaits are normally three, and remain unchanged in senile shells; but often another plait arises between the lowest two, sometimes between the highest two, and once above all the rest. When senile the shell becomes very heavy, thickened especially on the inner side of the everted lip and along the columella. Colour: the typical tint is pale-yellowish, but it may be a rich chestnut-brown. The ornament consists typically of axial series of oblique lines in zigzag arrangement; these oblique lines may be very long, going one-third round the shell, concealing any axial disposition, or they may be short and close set and blotchy at their junction, so as to exaggerate it. Sometimes they are altogether absent, leaving only the ground-tint, almost an albino variety, as in the two examples taken alive by Mr. Dannevig in 100 fathoms west of Eucla. In some specimens a white spiral band, starting from the aperture just below the suture, winds round the shell and interrupts all the colour-markings. The radula (pl. xvi., figs. 1, 2) from a living individual of 21 cm. in length measures 21 mm. by 1 mm., and consists of a single line of seventy imbricating, tricuspidate, rachidian teeth only. The old teeth have their cusps completely worn away, and are reduced to the crescent-shaped bases.

**Scaphella papillosa**, Swainson. Pl. xiv., figs. 1-3.

*Voluta papillosa*, Swainson. Appendix, Bligh Catalogue.

*Voluta papillaris* (*papillosa*), Swainson, Sowerby, Genera of Shells, 1820-1825, pl. ccli., no locality. According to a note by W. J. B., "the slight alteration here given in the trivial name is only to be considered in the light of a correction of the press." Mr. Sowerby, sen., or Mr. Broderip is, therefore, responsible for the change in the specific name. Kiener, in Coq. Viv., 1839, under the name of *Voluta sowerbyi nobis*, pl. 1., 2 figs., gives figures of *V. fusiformis*, Swainson, and refers to them in mistake as *V. papillaris*, Sowerby, and changes the name to *V. sowerbyi*.

Swainson, in Lardner's Cabinet Cyclopaedia, Natural History, Malacology, 1840, p. 108, calls his shell *Scaphella papillaris*, and figures it in the text 12A, and on page 318 refers to it as *Scaphella papillosa*, Sowerby, Gen., as though uncertain which name to retain. Sowerby, in Thes. Conch., vol. i., 1847, p. 207, Sp. 36, pl. xlvii., fig. 30, cites its *habitat* as "Fijee Islands." Reeve, Conch. Icon., 1849, vol. vi., pl. iv., fig. 10, gives Port Lincoln as a *habitat*, under the name *Voluta papillaris*. He writes, "Mr. Swainson named this species *papillosa*, with the view of drawing attention to the remarkable papillary structure of the apex, but as the word signifies 'full of papillæ' it is better rendered *papillaris*. Taking it to refer to the painting, and confounding the species with *V. fusiformis*, M. Kiener has changed the name to do honour to Mr. Sowerby (calling it *V. sowerbyi*, Kiener), because the spots have so rarely the appearance of papillæ." Mr. Sowerby acknowledges the compliment in language severe but not the less true, by calling it "an absurdity." Gray, in Proc. Zool. Soc., London, p. 63, calls it *Volutella papillosa*, Gray. Crosse, Jour. de Conch., 1871, vol. xix., p. 297, refers to it as *Voluta* (*Alcithoe*) *papillosa*. Petterd, in Jour. of Conch., 1879, p. 343, as *Voluta papillosa*, Swainson, cites it as from the north coast of Tasmania and Encounter Bay, South Australia, and off the coast of New South Wales, between Montague Island and Twofold Bay, dredged in 1,900 fathoms (Brazier). He creates and describes a variety *macquariensis*, of a uniform yellowish colour without bands or reticulate markings, from Macquarie Harbour, west coast of Tasmania. Tryon, Man. Conch., 1882, vol. iv., p. 96, pl. xxviii., fig. 106, as *Voluta* (*Alcithoe*). Brazier, in Proc. Linn. Soc., N.S.W., 1897, vol. xxii., p. 779, describes *Voluta kenyoniana*, from Cape Everard, Victoria, a form with 19-20 axial obtuse ribs, which in Proc. Mal. Soc., London, 1906-7, vol. vii., p. 6, was recognized as only a variety of *Voluta papillosa*, Swainson. Pritchard and Gatliff, Proc. Roy. Soc., Victoria, 1898 (1897), vol. x. (New Series), p. 282, give "Phillip Island, Western Port, Portland." Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 360.

Between 40 and 120 miles west of Eucla, about the 100-fathom line, 4 examples were taken. Two, which were mature, measured only 80 mm. in length by 32 mm. in breadth and 71 mm. by 30 mm. One nearly mature, 65 mm. by 29 mm., and one immature, 53 mm. by 22 mm. A specimen from Port Victor measures 105.2 mm. by 50 mm., and one from Victoria 124 mm. by 59 mm.; so that the deep-sea examples are much smaller and proportionately narrower. But their colour is typical, though faint (all were dead shells). They all show the typical proximity and heaping up of three plaits, with a very small plait behind these, and a distinct anterior plait close to and almost forming the border of the canal, though this last was absent from the juvenile example. One of the mature individuals showed obsolete axial costæ on the base of the body-whorl, just beyond the inner lip, so approximating to var. *kenyoniana*, Brazier. Further east the trawler "Endeavour" had taken several examples of this variety, probably to the east of Bass Straits, all dead. A mature micromorph was 65 mm. long by 32.5 mm. broad, the largest was 112 mm. long by 49 mm. broad. The costæ are more numerous than in the type of the variety described by Brazier (19 to 20), 54 being counted in the penultimate whorl. But their validity and their number vary in the examples examined. In the micromorph they are less crowded, and in another specimen they are almost absent from the body-whorl. The protoconch and ornament resemble those of the specific type. I have had one of these figured on pl. xiv., figs. 2, 3.

Since writing the above Mrs. Agnes Kenyon has kindly lent me the type specimen of Brazier's species for comparison. This can scarcely be said to have 19-20 obtuse ribs, as he describes it. On the body-whorl 44 axial costæ can be counted, and none in the last inch from the aperture. These are rather sharp at their summits, but broad at their bases, and vary very greatly in their size and proximity. In the penultimate there are about 50, but they are so irregular in size and nearness that it is difficult to count them, and they scarcely can be called ribs, but are rather irregular axial costulæ. The figs. 2 and 3 on pl. xiv. are an almost exact reproduction of the type, though taken from an "Endeavour" specimen in my collection.

### ***Cymbium flammeum*, Bolten.**

*Cymbium flammeum*, Bolten, Mus. Boltenianum, 1798, p. 151, No. 1899, No. 3.

*Voluta diadema*, Lamarck, Ann. du Mus., vol. xvii., p. 57, No. 1.

*Var. Cymbium miltonis*, Gray.

*Goluta miltonis*, Gray, 1833, Griffith's Cuvier's Animal Kingdom, vol. xii., Mollusca, 1834, pl. xxix. (1833); Kiener, Coq. Viv., 1839, p. 10, Sp. 6, pl. x.

*Cymbium miltonis*, Gray, Conch. Cab. (Ed. Kuster), 1841, Band. v., Abt. 2, p. 213, Taf. xlii., fig. 1.

*Goluta miltoni*, Gray, Deshayes, Anim. S. Vert., 1844 (2nd Edition), vol. x., p. 406, Sp. 46.

*Melo miltonis*, Gray, Broderip, Thes. Conch., 1847, vol. i., p. 415, Sp. 7, pl. lxxxiii., figs. 24, 25.

*Cymbium miltonis*, Gray, Reeve, Conch. Icon., 1861, pl. xvi.

*Melo miltonis*, Gray, Angas, Proc. Zool. Soc., London, 1878, p. 865.

*Melo diadema*, Lamarck, *var. miltonis*, Gray, Tryon, Man. Conch., 1882, vol. iv., p. 82, pl. xxiii., fig. 28.

It is well figured in Griffiths' Edition of Cuvier's Animal Kingdom, but no description is given, and its name does not appear in the letterpress. Reeve says it was named in honour of Lord Milton, afterwards Earl Fitzwilliam. Its *habitat* was unknown, and is first recorded in Thes. Conch. as from Swan River, Australia. Later Mr. Angas cited it from Fowler Bay, on the South Australian coast, and Mr. Bednall gave me a specimen labelled Streaky Bay, a little distance further east. Three specimens were taken by the Federal trawler "Endeavour," all dead, one in 95 fathoms 90 miles west of Eucla, measuring 11 cm. by 6.2 cm., with four distinct columellar plaits; a second in 88 to 100 fathoms in the same locality, of 17.3 cm. by 9.7 cm., also with four distinct plaits; and a third 19.2 cm. long, with only three plaits, corresponding with the anterior three of the other specimens. It has a much more prominent protoconch and a more elate spire than the second, but otherwise they are quite similar.

Two individuals, from Fowler Bay, obtained from Mr. W. Reed, were taken alive. They have the typical narrow elliptic form, somewhat elate spire, the incurved spines, and four columellar plaits, with abundant white triangles in the ornament. Their walls are of medium thickness. One has in the body-whorl six well-marked axial costations, corresponding with similar axial gutters within, and running down from the spines, showing that the animal curved its shell outwards as it proceeded to form the scale of the spine, and curved it in as it completed the spine.

### *Ancilla oblonga*, Sowerby.

*Ancillaria oblonga*, Sowerby, Spec. Conch., 1830, part 1, p. 7, figs. 38, 39; Kiener, Coq. Viv., 1843-44, p. 15, No. 10, pl. iv., fig. 2, "The shores of New Holland"; Reeve, Conch. Icon., 1864, vol. xv., pl. viii., figs. 24a, 24b; Sowerby, Thes. Conch., 1866, vol. iii., p. 65 (*Ancillaria*, p. 9), No. 38, pl. cxxiii. (*Ancillaria*, pl. iii.), figs. 57, 58; Tryon, Man. Conch., 1883, vol. v., p. 96, pl. xxxix.

fig. 47, as a synonym of *A. marginata*, Lamarck; Watson (*Ancilla*), 1886, "Chall.", Zool., vol. xv., p. 231, "38 fathoms, off Bass Strait"; Tate and May, Proc. Linn. Soc., N.S.W., 1901, vol. xxvi., p. 365, "Tasmania" = "*A. fusiformis*, Petterd"; Hedley (*Ancillaria*), Memoirs Austr. Mus., 1903, vol. iv., part 6, p. 364, "New South Wales"; Hedley (*Ancilla*), 1909, Austr. Assoc. Adv. Sci., p. 363, "Queensland."

Taken in 100 fathoms 90 miles west of Eucla. Mr. Gabriel has sent me two examples dredged in Western Port. Victoria.

### ***Ancilla mucronata*, Sowerby.**

*Ancillaria mucronata*, Sowerby, Thes. Conch., vol. iii., 1866, p. 63, No. 30, pl. 211, figs. 11, 12, "Australia"; Reeve, Conch. Icon., 1864, Sp. 10, pl. iv., figs. 10a, 10b, "Tasmania"; Kiener, Coq. Viv., 1843-44, *Ancillaria*, p. 7, Sp. 4, pl. iii., fig. 3, "The shores of New Holland." This figure is most like our shell in colouring.

Taken in 75 fathoms 80 miles west of Eucla, 1: in 80 fathoms 80 miles west of Eucla, 3; in 100 fathoms 90 miles west of Eucla, 1; in 105 fathoms, 3; in 140 fathoms, 2.

They were all dead, but several in very good condition, of a cinnamon or salmon colour, palest in the upper part of the spire and deepest between the lowest white band and the white columella, not quite so deep in the wide space between the two narrow white bands on the body-whorl. Kiener's figure is a fair representation of it. It is quite unlike *A. beachportensis*, Verco.

### ***Hemipleurotoma quoyi*, Desmoulins.**

*Pleurotoma quoyi*, Desmoulins, Actes. Soc. Linn., Bordeaux, 1842, p. 61.

*Hemipleurotoma*, Verco, Trans. Roy. Soc., S.A., 1909, vol. xxxiii., p. 294.

Taken in 100 fathoms 90 miles west of Eucla, 2.

## EXPLANATION OF PLATES.

### PLATE X.

- Fig. 1. *Cypræa armeniaca*, Verco, dorsal view.  
 " 2. " " " ventral view.  
 " 3. " " " side view.

### PLATE XI.

- Fig. 1. *Scaphella fulgetrum*, Sowerby.  
 " 2. " " " var. *lunulisligata*.  
 " 3. " " " var. *connectens*.

### PLATE XII.

- Fig. 1. *Scaphella fulgetrum*, Sowerby, var. *tricincta*.  
 " 2. " " " var. *unicincta*.  
 " 3. " " " var. *punctisligata*.

## PLATE XIII.

- Fig. 1. *Scaphella dannevigii*, Verco,  
 „ 2. „ „ „ apex.  
 „ 3. *Nassaria torri*, Verco, side view.  
 „ 4. „ „ „ ventral view.

## PLATE XIV.

- Fig. 1. *Scaphella papillosa*, Swainson, micromorph.  
 „ 2. „ „ „ var. *kenyoniana*, Brazier,  
 „ „ „ „ ventral view.  
 „ 3. „ „ „ var. *kenyoniana*, Brazier,  
 „ „ „ „ side view.

## PLATE XV.

- Fig. 1. *Acmæa calamus*, Crosse and Fischer, var. *polyactina*, Verco  
 „ 2. „ „ „ „ variety.  
 „ 3. *Patella axiaerata*, Verco, dorsal view.  
 „ 4. „ „ „ side view.  
 „ 5. *Acmæa patellavecta*, Verco, dorsal view.  
 „ 6. „ „ „ interior.  
 „ 7. „ „ „ side view.

## PLATE XVI.

- Fig. 1. *Scaphella roadnightæ*, McCoy, radula.  
 „ 2. „ „ „ „ worn down.  
 „ 3. *Acmæa alticostata*, Angas, radula.  
 „ 4. „ „ „ lateral tooth.  
 „ 5. „ „ *patellavecta*, Verco, radula.  
 „ 6. *Gyrineum ranelloides*, Reeve, radula.  
 „ 7. „ „ „ operculum.
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## NEW AUSTRALIAN DIPTERA FROM ANTS' NESTS.

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Communicated by A. M. LEA.

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The *Diptera* described in the following are an interesting addition to the myrmecophilous fauna, particularly the two *Syrphidae* here described as species of *Microdon*. While the *Microdontiinae* are believed to be generally myrmecophilous in the larva state, but very few species have been actually bred from ant nests. There has particularly been some doubt as to the habits of the more anomalous forms, such as these here described; it will thus be seen that differences in the organization of the imago bear no relation to the larval habits.

All the species of *Microdontiinae* so far reported from Australia show the pedunculate wasp-like abdomen, quite unlike the typical species of *Microdon*. We were, therefore, at first inclined to put the species from Victoria (*M. daveyi*) in a separate genus, but a review of the literature and examination of material from remote parts of the world has led us to a more conservative course. It was found that the genus *Mixogaster*, to which one of the Australian species has been wrongly referred, is quite a distinct concept, and apparently confined to America; *Ceratophya* was poorly defined, and it is extremely doubtful that the Australian species should be referred to it. A last objection arose in the fact that species occur elsewhere which intergrade with the Australian ones in the shape of the abdomen.

***Microdon daveyi*, n. sp.**

♀. Dull-black, finely granulose, ornamented with golden pubescence. Frons at vertex at least one-third as wide as head, widening towards the antennae, covered with golden pubescence except on a transverse patch at lower extremity of ocellar triangle; face projecting immediately below antennae, flattened and nearly straight, perpendicular in profile, descending to slightly below lowest level of eyes, thickly covered with golden pubescence; postocular cilia yellow. Antennae long, the two basal joints ferruginous, the third black, proportions 6-1-12; arista as long as basal joint (6), bare, ferruginous; third joint subcylindrical, very slightly



narrowed towards base, the apical half thickened, apex bluntly pointed. Thorax with a band of golden pubescence immediately in front of the suture, narrowed or broadly interrupted in the middle; lateral and posterior margins sparingly golden pubescent; the presutural band is carried down over the pleuræ. Scutellum transverse, rounded, unarmed, with distinct golden pubescence on disc. Abdomen petiolate, first and second segments about half as broad as thorax, the first short and thickened basally, the third to fifth segments together elongate ovate, but slightly broader than thorax; first segment with a group of yellowish white hairs at the sides; second segment shining and only granulose on apical half, ridged in the middle, broadly yellowish laterally at middle and narrowly on posterior margin, posterior margin especially laterally, with golden pubescence; third and fourth segments with scattered golden hairs and broad apical, transverse, golden fasciæ formed of thickly-placed golden hairs, but imperfectly interrupted at middle; fifth segment with golden pubescence becoming denser towards apex; ovipositor bifid, pale-ferruginous, slightly hairy. Legs pale-ferruginous tinged with brown, femora mostly black, the apices pale-ferruginous; tibiæ thickened on apical half and somewhat curved, medianly more or less darkened; tarsi broader than tibiæ, the joints very short; all the legs with dense, short, yellowish white hairs; mid femora with long pubescence on posterior surface. Wings infuscated from base to middle of first posterior cell above fourth vein, beyond this point above third vein, broad infuscations along fifth vein, cross-veins, and particularly the veins closing first posterior and discal cells; veins black; venation typical for *Microdon*, the stump of third vein projecting about half-way across first posterior cell, last section of fourth vein straight, nearly rectangular with third vein, a minute stump at angulation; anterior cross-vein but slightly more than its own length from base of discal. Halteres ferruginous. Length, 7-9 mm.

Ararat, Victoria, Australia (H. W. Davey), five specimens reared from larvæ in ants' nest.

The puparium is of the shape usual in *Microdon*, elongate-elliptical, nearly straight-sided with very slight indications of constrictions near the middle, strongly convex, the ventral surface (by which it is attached) perfectly flat; colour ferruginous-yellow, the margin slightly darker, thoracic horns ferruginous-brown, posterior respiratory horn reddish-brown, pruinose; the dorsal surface shows a median longitudinal crease extending the entire length to the posterior respiratory tubercle; on each side of this the surface is broken into reticulations, larger and forming fairly regular rows towards

the middle, somewhat smaller and more irregular towards the sides, there being about ten longitudinal rows on each half; the surface is granular and the reticulations are produced by rows of closely approximated minute, white, tuberculate spines; the surface between the reticulations is somewhat depressed; the posterior respiratory tube is somewhat thickened at the base, with a dorsal basal swelling, bluntly rounded at tip, the surface coarsely granular. Length, 85 mm.; width, 5 mm.; height, 3 mm.

***Microdon brachycerus*, n. sp.**

♂. Black and ferruginous, ornamented with pale-golden pubescence. Frontal stripe at vertex one-fifth as wide as head, at frons half as wide as at vertex, with long hairs which are yellow at sides; face convex, prominent, slightly retreating towards mouth, polished; frons and face with whitish-yellow pubescence. Antennæ short and stout, ferruginous, comparative lengths 3-1-16; third joint thick, hardly compressed, bluntly pointed; arista thick, shorter than third joint: the two basal joints with numerous short hairs. Thorax black, margined with golden-yellow, long pubescence, most conspicuous on posterior margin: a transverse, arcuate fascia of golden hairs before the middle; pleuræ with long yellowish-white hairs on anterior half; scutellum prominent, with two short, stout teeth, black with short black pubescence similar to that on dorsum of thorax. Abdomen longer than broad, broadest at apex of second segment, ferruginous and black; first segment black, second dark basally and along apical margin, third darkened on apical half, the very long fourth segment with two large, indistinct, dark, lateral patches; all the segments with short golden pubescence, most conspicuous on posterior margin of third segment. Legs ferruginous, the femora darker, fore and mid femora with rather noticeable white pubescence posteriorly; all the tarsi thickened; fore tarsi shorter than tibiæ, the joints decreasing in length, except the last, fourth very short, twice as broad as long; hind tarsi similar but the first joint broader than tibiæ. Wing with the outer half grey above the third vein, and broadly tinged with grey along the cross-veins and the fourth and fifth veins, the darkening produced by dense, microscopic, downy hair; stump of the third vein well developed, extending more than half-way across first posterior cell; vein closing the discal cell bent strongly inward at first but finally joining the fourth vein at nearly a right angle. Length, 8 mm.

One male. Hobart, Tasmania, from ants' nest (A. M. Lea).

The puparium is of the shape usual in this genus: elliptical, strongly convex, flattened beneath where it is attached to a stone or other surface. The colour is dull yellowish-brown, obscured by irregularly attached particles of earth; the anterior pupal respiratory horns and the posterior larval ones are ferruginous; posterior respiratory tubercle bifid at tip. The dorsal surface is nearly smooth and shows none of the usual reticulations, but instead is studded with scattered prominent brown tubercles (somewhat obscured by the attached particles of earth). Length, 7 mm.; width, 5.5 mm.; height, about 3 mm.

*Microdon brachycerus* appears to be related to the Tasmanian species described by Macquart as *Aphritis vittatus* and *A. pictipennis*. The figure of the wing given by Macquart for the latter species (Dipt. Exot., Suppl. 4, pl. xii., fig. 12) agrees very well with the wing of our species; however, there are too many other differences (even allowing for Macquart's notorious inaccuracies) to admit the identity of the specimen before us with *pictipennis*. Furthermore, Macquart himself had some doubt that the male he described under *pictipennis* is correctly associated, and there is nothing to indicate whether the figure of the wing was taken from the female or male. In *M. brachycerus* the antennæ are unusually short and stout.

### ***Limosina mrymecophila*, n. sp**

♀. Shining black. Frons brown, shining, devoid of hairs, only the strong bristles present; these consist of two upwardly divergent central rows of three each, which are slightly incurved, of almost equal strength, and equidistant serially; a pair of closely-placed, nearly equal-sized bristles at above the middle near to eye margin, one near lateral posterior angle, one post-vertical on each side and one pair on ocellar triangle; antennæ clear yellow, first joint as long as third (the apparent second), first joint with several black bristles on inner surface, third joint slightly pubescent; arista very long and thin, slightly pubescent; face yellow, darker towards antennæ, one very long and strong and 2-3 very small bristles on jowls; palpi small, yellow. Thorax shining black, bare in front, the usual pubescent hairs increasing in number and length towards posterior margin, two distinct pairs of dorso-central bristles; scutellum large and broad, regularly rounded on posterior margin. Abdomen highly polished, bare except on posterior margin of last two and lateral margins of all segments; third segment with a raised transverse ridge at close to posterior margin. Legs

black, only the trochanters, extreme bases of tibiae, and tarsi yellowish; fore femora with 2-3 strong bristles near tip on antero-ventral surface; fore tibiae pubescent; mid femora with two antero-dorsal bristles at near tip; mid tibiae with one strong dorsal bristle at slightly beyond basal third and two at about apical fourth—one each on antero—and postero-dorsal surfaces, besides these strong bristles there are several weaker hair-like ones, two of which are at basal third and one at apical third, as well as many strong hairs; hind femora and tibiae with numerous hairs but no bristles. Wings with costa spined, more numerous and weaker beyond first vein; first costal division about twice longer than second, third four times as long as second and distinctly longer than fourth; second vein twice curved, nearer to costa on basal half than on apical half, striking costa at right angles; third vein only slightly bent upward and reaching margin at close to tip; fourth vein reaching fully half-way to wing margin; fifth vein distinct to mid-way to margin; cross-veins nearly upright; first costal cell brown, second clear, third dark at base, middle, and tip; second submarginal cell brown at tip; a brown streak from front margin to near hind margin at middle, and a large rounded spot at near basal third; first posterior cell with the tip brown and a rounded spot beyond and one before middle: the entire hind margin of wing brown, with only an inverted U-shaped clear patch in second posterior cell and two clear spots near anal angle; discal cell with a rather triangular patch of brown on lower margin at middle. Halteres black. Length, 2 mm.

One female. Otford, New South Wales, Australia (A. M. Lea). With the ant *Ectotomma metallicum*.

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# ABSTRACT OF PROCEEDINGS

## OF THE

# Royal Society of South Australia

(Incorporated)

FOR 1911-12.

ORDINARY MEETING, NOVEMBER 9, 1911.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

NOMINATIONS.—T. S. Poole, B.A., LL.B., solicitor, Adelaide, as Fellow, and Miss R. Stenhouse as Associate.

EXHIBITS.—Mr. A. M. LEA, F.E.S., exhibited weevils of the genus *Mandalotus*, and also *Frenchia*, which he said was the most extraordinary insect in the world, infesting *Banksias* and *Casuarinas*. The young are viviparous, and resemble the larvæ of the ordinary scale insects, but the metamorphosis is stranger than that of many insects. Mr. J. G. O. Tepper remarked that when parrots were abundant the *Frenchia* galls were rare, and that he had seen the young issuing from the tubes. Dr VERCO exhibited *Edentellina typica*, recently described by Pritchard and Gatliff, which he had met with while dredging in South Australia. The umbo is only on one valve, and remarkable in shape, like a tiny nautilus shell.

DISCUSSION.—Mr. S. DIXON initiated a discussion on "The Influence of Metallic Minerals on Vegetation." Mr. A. M. Lea thought that the Agricultural Department was the right body to take up this subject. Professor Rennie said that it was a complex matter, requiring prolonged biological and chemical investigation. Messrs. Edquist and Tepper also joined in the discussion.

ORDINARY MEETING, APRIL 11, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

ELECTION.—T. S. Poole, B.A., LL.B., solicitor, Adelaide, was elected a Fellow.

NOMINATIONS.—F. R. Zietz, ornithologist, South Australian Museum; L. K. Ward, B.A., B.E., Government Geologist, Adelaide; and R. L. Jack, B.E., Assistant Government Geologist, Adelaide, were nominated as Fellows.

**EXHIBITS.**—Mr. W. HOWCHIN, for Mr. C. E. Broughton, exhibited specimens of turquoise discovered by Mr. Greenwood, jun., at Mount Painter, South Australia. Turquoise is a hydrous phosphate of alumina. The determination was made at the Technological College, Sydney. This is its first recorded appearance in South Australia, and Mr. Howchin, in view of the value of the mineral, recommended that the locality be searched for better specimens. Mr. Dixon said that he had found turquoise on the Murchison goldfield, Western Australia. Mr. E. ASHBY exhibited birds of the Swift family, including *Salangana esculenta*, from New Guinea, which has also been recorded from South Australia, and which constructs the so-called edible birds' nests; the Australian spine-tailed swift (*Heterura caudacuta*); and the Javanese swallow (*Hirundo javanica*), also recorded from Australia. THE PRESIDENT exhibited a series of eight perfect adult specimens of "*Scaphella roadnightiae*." This remarkable mollusc was first obtained on the Ninety-mile Beach, Victoria, by Baron von Mueller, who discovered the first specimen propping up a hotel window, and gave it to Mr. McCoy, who described it in 1881. None had been obtained alive until two were taken by the "Endeavour" off Eucla in 100 fathoms. This shell varies extremely in size, the micromorphs and macromorphs being respectively smaller and larger than the type. The apex or protoconch is always present and exceedingly adherent, while in many other species of *Voluta* it is invariably absent in adult specimens.

**PAPERS.**—"The Ionization produced by the Impact of Solid Bodies in Air," by Professor KERR GRANT, M.Sc. He described the experiments carried out by himself and Mr. G. E. M. Jauncey, B.Sc. "The occurrence of an Outlier of Lower Cainozoic Rocks, in the River Light, near Mallala," by WALTER HOWCHIN, F.G.S.

#### ORDINARY MEETING, MAY 9, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

**ELECTIONS.**—F. R. Zietz, ornithologist, South Australian Museum; L. K. Ward, B.A., B.E., Government Geologist, Adelaide; and R. L. Jack, B.E., Assistant Government Geologist, Adelaide, were elected Fellows.

**NOMINATIONS.**—J. G. O. Tepper, F.L.S., Norwood, as an Honorary Member, and A. C. Broughton, undergraduate, Adelaide University, as a Fellow.

**EXHIBITS.**—Mr. W. HOWCHIN exhibited a fine example of geological ripple marks on a face of Lower Cambrian

quartzite, obtained near Laura by Mr. M. H. Thiele, head teacher of Laura Public School, who had forwarded it to the University. Mr. A. M. LEA exhibited an insect-catching grass (*Genchrus australis*) gathered by him near Cairns, Queensland. The outer glumes of the spikelets were armed with barbed hairs or bristles, on which numerous insects were impaled. The plant does not appear to draw nourishment from these. Mr. F. R. ZIETZ exhibited anchovies brought by Mr. W. B. Poole from the Glenelg River, where they appear to be the prey of bream. Others from Port Willunga had been secured by Mr. A. H. C. Zietz. He also exhibited an *Aplysia* brought from Port Lincoln by Mr. Randell. THE PRESIDENT exhibited a large new volute found off Newland Head, and more recently in the Australian Bight, in 100 fathoms; also a beautifully perfect specimen of *Cominella torri*, fragments of which he had previously found on St. Francis Island. This specimen was trawled in 100 fathoms. It locates the species in the genus *Nassaria*.

PAPER.—“Additions to the Flora of South Australia,” by J. M. BLACK.

#### ORDINARY MEETING, JUNE 13, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

DEATH OF CANON BLACKBURN.—THE PRESIDENT said:—“As President I have this evening with sincere regret to formally notify the Society of the death of our esteemed Fellow, the Rev. Thos. Blackburn, B.A. This furnishes an opportunity not to be missed of publicly expressing our high appreciation of him and our sense of the great loss we have sustained. He graduated Bachelor of Arts at the London University in 1868, and leaving England about eight years later, was in Honolulu for some six years, then in Port Lincoln for about four years, and finally he settled at Woodville, where he was Rector of St. Margaret's Church. This was in 1886, the same year that his name first appears on our list of Fellows. He must, therefore, have come into touch with our Society directly after his arrival, and this immediate alliance with a scientific body is evidence of the keenness and energy of his scientific instincts. He has consequently been associated with us for rather more than a quarter of a century. He was no nominal member. In our Transactions for 1886-1887 are to be found five papers written by him, totalling together no fewer than 184 pages of printed matter: and as the whole volume contained only 303 pages,

the Society must have felt it had struck a rich lode when it discovered Mr. Blackburn. That was in the first year of his membership, and from then until he died not a volume of our Transactions has been issued which does not contain one or more of his valuable contributions. A sort of statistical curiosity prompted me to find out the extent to which he has enriched our Proceedings, and I have counted at least forty-one papers, extending over nearly 1,700 pages; so that his scientific contributions would equal four volumes of closely printed material of more than 400 pages each. One paper during his first year covered 110 pages, and another in 1902, 114 pages. I think it probable he established a record in our Society as to abundance of material supplied. The quality of his work equalled the quantity. All his specific definitions and descriptions are given in Latin, and to one like myself, who is unacquainted with entomology, the particular department of natural history he studied, the whole substance of his papers appears to be exact, clear, and detailed, and written in cultured language, making his productions equally classical and scientific. His contributions can, as a rule, be picked out at a glance, because he frequently employed a peculiar tabulated arrangement of his numerous species in groups, which suggests the quaint poetic composition of some aberrant genius, a strangely exaggerated instance of versification after the style of the "Samson Agonistes" of Milton, or "Alexander's Feast," by Dryden. One marked example of this occurs in his paper of 1910, where he discusses more than seventy species and gives their specific diagnostics, spreading them over seven closely printed pages, in lines which begin at different distances from the left-hand margin, with a sinuous or a step-like outline, each initialled by a single or double capital letter, each distance and letter having its characteristic significance, so as to indicate to the eye the several alliances and distinctions between all the species in the group. This tabular arrangement, so ingenious and effective, shows the thoroughness and clearness of his knowledge of the subject, and must have aided investigators who referred to it as much as, if not more so, than it tried the capabilities of his linotype printer. Mr. Mayo, who was for many years our Honorary Secretary, informs me that to Mr. Blackburn probably more than any other contributor to our Proceedings is due the wide exchange our Transactions enjoy, for Entomological Societies, especially, sought to effect arrangements by which they might regularly receive our annual volumes and obtain our back numbers. This is a practical testimony to his efficiency from ex-



perts in his own department. He had not that pleasurable incentive to scientific labour which some of us have, from our association with the Royal Society, in the opportunity of publicly showing fellow-members novel or unusual exhibits in illustration of our papers, and of enlarging in a familiar way upon their points of interest. His contributions were regarded by him as too technical and abstruse to permit this; and so he worked, as it were, alone, without this encouragement and happy extraneous aid, and hence deserved the greater commendation. Not only as an author, however, has he aided our Society; but also as a member of its Executive. In October, 1887, he became a member of the Council, and served upon it without intermission until his death. In 1889 he was elected Vice-President, a position which he filled for twelve years; and in 1890 he was elected to the Presidency, and filled the chair for two years. As a member of Council he was of great assistance. Being an expert in entomology he was our referee in this department of natural history on all questions of exchange and the acceptance and printing of papers presented to the Society in this subject; while his shrewdness, trueness, kindness, and general knowledge made him very helpful in the ordinary business of the Council. When President, in 1890, he delivered an excellent address at the annual meeting, in which he strove to show the ultimate aim of the study of natural history and the urgent necessity and great advantage of collecting and recording all available facts and describing all recognized novelties in our Australian continent, and to do this as quickly, accurately, and fully as possible while the opportunity is afforded, and before commerce, agriculture, and extending civilization shall prevent the possibility of such work. He certainly practised what he preached, and is one of the best examples of such industry, accuracy, and promptitude. And now that his work is done we trust others will take the subject up where he has left it, so realize his ideals, suffer his word of exhortation, and follow in his steps. We shall miss his well-known, delicate, almost ascetic, form, as though 'much study had made him very lean'; we shall miss his keen face, his dark, bright, intelligent eyes, his gentle and courteous manner, his quiet modesty and reserve; but we shall recall with pleasure and pride the many excellent qualities of our late Fellow; while our Transactions will ever remain a monument to his interest and delight in the scientific study and his wonderful knowledge of those humbler members of the animal kingdom—the creeping things of the earth." Mr. A. M. Lea added some reminiscences of Canon Blackburn,

ELECTIONS.—J. G. O. Tepper, F.L.S., Norwood, was elected an Honorary Fellow; A. C. Broughton, undergraduate, Adelaide University, was elected a Fellow; and Professor Kerr Grant, Adelaide University, was elected a member of Council to fill the vacancy caused by the death of Rev. Canon Blackburn, B.A.

EXHIBITS.—Mr. ASHBY exhibited some pigeons, robins, kingfishers, and ride-birds. Mr. EDQUIST exhibited an abscess formation in the fat of a shoulder of mutton. Dr. E. A. JOHNSON exhibited a section of the aorta of one of the Pharaohs, received from the Curator of the Royal College of Surgeons of England.

PAPER.—“The Giant Monitor of Central Australia (*Varanus giganteus*), with a Note on the ‘Fat Bodies’ of this Species,” by Professor E. C. STIRLING, C.M.G., F.R.S., etc. The paper was illustrated by the exhibition of a large stuffed specimen of the species, and also the claws and vertebræ of a fossil species, immensely larger, for comparison.

#### SPECIAL MEETING, JULY 11, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

ALTERATION OF RULE 17.—On the motion of Mr. S. DIXON, seconded by Mr. W. B. POOLE, it was resolved—“That in Rule 17 the words ‘with the prescribed subscription (if any)’ be struck out.”

PROPOSED ALTERATION TO BY-LAW 1 OF SECTION I.—Mr. W. B. POOLE moved and Mr. S. DIXON seconded—“That this by-law be altered by the addition of the words ‘but if elected after June 1 the subscription shall be 10s 6d. for the remainder of the year.’” After discussion the motion was lost.

#### ORDINARY MEETING, JULY 11, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

NOMINATION.—Captain S. A. White, “Weetunga,” Fulham, as a Fellow.

EXHIBITS.—Mr. A. M. LEA exhibited wasps’ nests from Queensland. The largest kind was built on the bark of a eucalypt, which in course of time shelled off and fell to the ground, carrying the nest with it. The specimen came from Mount Tambourine, Logan River district, and was estimated to contain 80,000 cells, made of a wood-paste prepared by the wasps, and then built up into the papery walled compartments. The nests of the two smaller species came from Townsville. Mr. HOWCHIN referred to the architecture of a British species observed by him in England. Mr. LEA also

exhibited *Anobium paniceum*, the so-called bread or biscuit beetle, recently found eating the poisonous seeds of *Strychnos nux-vomica* in a suburban pharmacy. Mr JACK exhibited a strange fungus from Gawler Ranges for identification. He was advised to hand it to Professor Ewart in Melbourne or to the Victorian Mycological Society. THE PRESIDENT exhibited two species of Gasteropoda:—(1) *Cyprea umbilicata*, Sowerby, in Tankerville's Catalogue. Later this was regarded as a monstrosity of *C. tigris*, Linn., and then of *C. pantherina*, Linn. Afterwards a number were found at Barren Island by Gunn, a Tasmanian, and proved it to be a valid species. He also exhibited specimens taken by the Commonwealth trawler in the Great Australian Bight, which were more globular than the type, and lacked the peculiar projection of the anterior part of the aperture found in the more eastern examples, and had a rich uniform apricot colour on the base. He proposed to call the western examples exhibited *C. umbilicata*, var. *armeniaca*, Verco. (2) *Scaphella fulgetrum*, Gray. The exhibited series of this beautiful shell contained specimens from as far east as Kingston, and others dredged as far west as the longitude of Eucla. It showed remarkable variations, some shells being unicolored and some having spot-bands or lightning marks, or spiral-bands, either alone or in conjunction. It also included both macromorphic and micro-morphic forms.

PAPER.—“Notes on Recurrent Transgressions of the Sea near Dry Creek,” by WALTER HOWCHIN, F.G.S

#### ORDINARY MEETING, AUGUST 8, 1912.

THE VICE-PRESIDENT (Walter Rutt, C.E.) in the chair.

ELECTION.—Captain S. A. White, “Weetunga,” Fulham, was elected a Fellow.

NOMINATIONS. — Hugh Corbin, B.Sc., Lecturer in Forestry, Adelaide University, and J. Desmond, veterinary surgeon, Adelaide, as Fellows.

EXHIBITS.—Mr. A. M. LEA exhibited ant commensals, including species of *Saragus*, *Troc*, *Histerida*, *Staphylinida*, and *Chlamydopsis*; also a hippoboscid fly from a wallaby. Mr. F. R. ZIETZ exhibited a large sub-fossil, *Turbo stamineus*, Martyn, from the travertine limestone at Brentwood, Yorke Peninsula.

PAPER.—“Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species,” by the late CANON BLACKBURN, B.A. Communicated by Mr. A. M. LEA.

#### ORDINARY MEETING, SEPTEMBER 12, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

EXHIBITS —Mr. J. G. O. TEPPER exhibited a photograph of a species of *Podargus*, taken on the nest; also pictures of icebergs painted in 1858 by the late Mr. F. S. Crawford on his voyage from England in the ship "Istamboul." Mr. A. M. LEA exhibited fine specimens of the very dissimilar sexes of *Ornathoptera priamus* or *Proides*. THE PRESIDENT exhibited a fine series of *Voluta papulosa*, Swains, from Tasmania, Victoria, and South Australia, including the rare ribbed variety and macromorphic and micromorphic forms. This series showed the necessity of having many specimens from different localities to prove the continuity of form and prevent the multiplication of species, the ribbed form having been described by Brazier as a separate species, *Voluta kenyoniana*.

PAPERS —"The Polyplacophora of South Australia," by W. G. TORR, LL.D., M.A., B.C.L., illustrated by the exhibition of Chitons. "The Curculionidæ of Australia, Part x., *Cryptorhynchidæ*," by A. M. LEA, F.E.S., illustrated by exhibits of many of the species described.

#### ANNUAL MEETING, OCTOBER 10, 1912.

THE VICE-PRESIDENT (Professor E. H. Rennie, M.A., D.Sc., F.C.S.) in the chair.

An apology on account of illness was received from the President.

A letter was received from Dr. Pulleine resigning the office of Secretary on account of pressure of business.

The Annual Report was taken as read and adopted.

The Balance-sheet was read by the Hon. Treasurer and adopted.

ELECTION OF OFFICERS.—*President*, J. C. Verco, M.D., F.R.C.S.; *Vice-Presidents*, Professor E. H. Rennie, M.A., D.Sc., F.C.S., and R. H. Pulleine, M.B.; *Hon. Treasurer*, W. B. Poole; *Members of Council*, Samuel Dixon and G. G. Mayo, C.E.; *Hon. Secretary*, Walter Rutt, C.E.; *Hon. Auditors*, W. L. Ware and H. Whitbread.

It was resolved—"That a letter be forwarded to Mr. J. S. Lloyd, F.I.A., S.A., who is relinquishing the position of Auditor on account of age, expressing regret and appreciation of his long-continued past services."

EXHIBITS.—Mr. A. M. LEA exhibited a case of contents of birds' stomachs; also a case of insects collected by Captain White during his rambles in the Gawler Ranges.

PAPERS.—"The late Rev. T. Blackburn, B.A., and his Entomological Work," by A. M. LEA, F.E.S. "Notes on the Marine Mollusca of South Australia, with Descriptions of

New Species, Part XV.," "Notes on the Marine Mollusca of Western Australia, with Descriptions of New Species, Part II.," and "Mollusca from the Great Australian Bight," by J. C. VERCO, M.D., F.R.C.S. "Notes on the Occurrences of Silica near Mount Painter, Flinders Range," by A. C. BROUGHTON. "Description of Wild Hybrids of Australian Ducks," by F. R. ZIETZ. "New Australian Diptera from Ants' Nests," by FREDERICK KNAB and J. R. MALLOCK, communicated by A. M. LEA. "Additions to the Flora of South Australia," by J. M. BLACK.

## ANNUAL REPORT, 1911-12.

The Council has the pleasure to report that the contributions to the Society's proceedings during the year were of great scientific value and of considerable local interest, while the exhibits at its meetings have been of a varied and interesting character.

The annual volume of Transactions will include, amongst other papers, one by Professor E. C. Stirling, C.M.G., F.R.S., on "The Giant *Tiranus* of Central Australia," which contains much unpublished information. Dr. W. G. Torr, in his paper on "The Polyplacophora of South Australia," has brought our knowledge of this interesting family of Mollusca up to date and described several new forms. Professor Kerr Grant, in his paper on "The Ionization Produced by the Impact of Solid Bodies in Air," has again introduced physical subjects into our Transactions, and the Council hopes in future to receive many of his valuable contributions.

Several series of papers which have been running through the Transactions for some years have been continued during the present session. Dr. J. C. Verco deals again with the South Australian Marine Mollusca and with the Marine Shells of Western Australia; Mr. A. M. Lea, F.E.S., with Australian Curculionidæ; Mr. J. M. Black with South Australian Introduced and Indigenous Plants; and Mr. W. Howchin, F.G.S., with the Geology of South Australia.

The Society has suffered a great loss by the death of the Rev. Canon Blackburn, B.A., F.E.S., who, since his election as a Fellow in 1887, has been the most voluminous contributor to the Society's Transactions. Part xlii. of his "Notes on Australian Coleoptera," which was almost ready for

publication at the time of his death, was prepared for publication and communicated by Mr A. M. Lea, who has also contributed an able paper upon the late Canon's life and entomological work.

One of our Fellows, Dr. Mawson, has again been engaged throughout the whole of this year in scientific exploration in the Antarctic.

A great advance has been made towards securing the western portion of Kangaroo Island as a reserve (which it is proposed to name Flinders Chase), the Commissioner of Crown Lands having asked for and received from your Council an outlined scheme for the formation and working of the Reserve and an estimate of the cost of initiating and maintaining the same, with a view to the preparation of a Bill to be laid before Parliament. The Fauna and Flora Protection Committee of our Field Naturalists' Section is to be congratulated upon having progressed so far in this matter.

Great progress has been made, under Mr Clucas and his assistant, towards placing the Society's valuable library in a satisfactory condition. More shelving has been provided, the books have been reshelved, and the indicator will soon be affixed. A considerable number of volumes has been bound, and many more are in the binder's hands. Arrangements have been made for the Assistant Librarian to be present prior to each meeting of the Society for the purpose of lending books to the Fellows.

The demand for the Society's publications still continues, and several important exchanges of whole sets have been arranged with other learned Societies.

During the year seven new Fellows have been elected, and Mr. J. G. O. Tepper, in recognition of his past scientific services, has been transferred to the class of Honorary Fellows. The membership now comprises 10 Honorary Fellows, 5 Corresponding Members, 75 Fellows, and 1 Associate.

JOS. C. VERCO, *President.*

ROBERT PULLEINE, *Hon. Secretary.*

# ROYAL SOCIETY OF SOUTH AUSTRALIA (INCORPORATED). REVENUE AND EXPENDITURE FOR 1911-1912.

	£	s.	d.	£	s.	d.	£	s.	d.
To Balance, October 1, 1911	...	...	...	533	3	1			
By Subscriptions—									
Royal Society	...	77	19	0				72	13
Field Naturalists' Section	...	18	0	0				59	14
Malacological Section	...	1	15	0				0	13
Microscopical Section	...	4	5	0				...	6
Grants from Government—				101	19	0			133
On Subscriptions	...	76	6	8					1
For Printing Reports on Scientific Investigations in South Australia	...	150	0	0				77	10
Sale of Transactions	...	...	...	226	6	8		0	6
Donations and Interest—				6	1	6		...	...
Donation	...	40	0	0				0	13
Interest on S.A. Government Stock	...	75	0	0				20	0
Savings Bank Interest	...	14	5	10				4	5
				129	5	10		3	0
Library—								...	...
New Shelving and Binding Books	...	41	0	0				27	5
Cataloguing	...	10	18	9				0	0
Purchase of Microscope	...	...	...	...				51	18
Cartaking and Lighting	...	11	12	2				21	19
Printing, Stationery, and Postage	...	14	1	2				...	...
Advertising	...	0	10	0				0	0
Bank Account Charges	...	0	10	0				26	13
Transfer to Endowment Fund	...	...	...	...				120	10
Balance, September 30, 1912	...	...	...	...				537	4
				£996	16	1		£996	16

Examined and found correct—

J. S. LLOYD, F.I.A.S.A., }  
HOWARD WHITREAD, } Hon. Auditors.

W. B. POOLR, Hon. Treasurer.

September 30, 1912.

(1) Printing of Memoir, part 4, vol. ii., is not quite completed. Liability for printing about £65.

ENDOWMENT FUND.

To Amount of Fund October 1, 1911	...	£	s.	d.	
„ Amount transferred from Revenue	and	...	2,156	0	0
Expenditure Account	...	...	120	10	10
			£2,276	10	10

By £2,000 South Australian scribled Stock	...	£	s.	d.	
„ Deposit in Savings Bank	...	1,997	10	0	
		..	279	0	10
			£2,276	10	10

**Examined and found correct—**

J. S. LLOYD, F.I.A.S.A., } Hon. Auditors.  
HOWARD WHITBREAD,

September 30, 1912.

W. B. POOLE, Hon. Treasurer.



## DONATIONS TO THE LIBRARY

FOR THE YEAR 1911-12.

## TRANSACTIONS, JOURNALS, REPORTS, ETC ,

presented by the respective editors, societies, and  
governments.

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441, 443, 445-7, 449-65, 467-69, 472-83, 486-90, 495.  
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- Mineral resources of the United States, 1909,  
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- Professional paper 70, 73, 75. Wash. 1911-12.
- Water supply paper, no. 265-8, 261, 263,  
266-70, 272-77. Wash. 1911-12.
- UNITED STATES NATIONAL MUSEUM. Bulletin, no. 77. Wash.
- Contributions from the U.S. National Herbarium,  
vol. 13, pt. 12; vol. 14, pt. 3; vol. 16, pt. 1. Wash.
- Proceedings, vol. 40. Wash. 1912.
- Report, 1911. Wash. 1912.
- WAGNER FREE INSTITUTE OF SCIENCE OF PHILADELPHIA.  
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- WASHINGTON ACADEMY OF SCIENCES. Journal, vol. 1, pt.  
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- WILSON ORNITHOLOGICAL CLUB Wilson bulletin, vol. 23,  
no. 3-4; vol. 24, no. 1-2 Oberlin.

### URUGUAY.

- MUSEO NACIONAL DE MONTEVIDEO. Anales, vol 7, tom. 4,  
ent. 3. Montevideo. 1911.

## LIST OF FELLOWS, MEMBERS,

Etc.,

OCTOBER, 1912.

Those marked with an asterisk have contributed papers published in the Society's Transactions.

Any change in address should be notified to the Secretary.

NOTE.—The publications of the Society will not be sent to those whose subscriptions are in arrears.

Date of  
Election

## HONORARY FELLOWS.

1910. \*BRAGG, W. H., M.A., F.R.S., Professor of Physics, University of Leeds, England (Fellow 1886).  
 1893. \*COSSMAN, M., Rue de Maubeuge, 95, Paris.  
 1897. \*DAVID, T. W. EDGEWORTH, C.M.G., B.A., D.Sc., F.R.S., F.G.S., Professor of Geology, University of Sydney.  
 1890. \*ETHERIDGE, ROBERT, Director of the Australian Museum of New South Wales, Sydney.  
 1905. GILL, THOMAS, I.S.O., Under-Treasurer, Adelaide.  
 1905. \*HEDLEY, CHAS. H., Naturalist, Australian Museum, Sydney.  
 1892. \*MAIDEN, J. H., F.L.S., F.C.S., Director Botanic Gardens, Sydney, New South Wales.  
 1898. \*MEYRICK, E. T., B.A., F.R.S., F.Z.S., Tothnanger, Marlborough, Wilts, England.  
 1894. \*WILSON, J. T., M.D., Professor of Anatomy, University of Sydney, New South Wales.  
 1912. \*TEPPER, J. G. O., F.L.S., Elizabeth Street, Norwood (Corresponding Member 1878, Fellow 1886).

## CORRESPONDING MEMBERS.

1881. BAILEY, F. M., F.L.S., Colonial Botanist, Brisbane, Queensland.  
 1880. \*FOELSCHE, PAUL, Palmerston, Northern Territory.  
 1893. STRETTON, W. G., Palmerston, Northern Territory.  
 1905. THOMSON, G. M., F.L.S., F.C.S., Dunedin, New Zealand.  
 1908. \*WOOLNOUGH, WALTER GEORGE, D.Sc., F.G.S., Lecturer in Geology, University of Sydney (Fellow 1902).

## FELLOWS.

1895. \*ASHBY, EDWIN, 111, King William Street, Adelaide.  
 1902. \*BAKER, W. H., F.L.S., Glen Osmond Road, Parkside.  
 1908. \*BENSON, W. NOEL, B.Sc., c/o W. Benson, 63, Pitt Street, Sydney.  
 1907. \*BLACK, J. MCCONNELL, Alfred Street, Norwood.  
 1909. \*BRADLEY, EDGAR J., C.E., Hydraulic Engineer's Department, Adelaide.  
 1912. BROUGHTON, A. C., University of Adelaide.  
 1911. BROWN, EDGAR J., M.B., D.Ph., 3, North Terrace.  
 1883. BROWN, H. Y. L., F.G.S.  
 1893. BRUMMITT, ROBERT, M.R.C.S., Medindie  
 1904. BRUNSKILL, GEORGE, Semaphore, South Australia

1906. BUNDEY, Miss ELLEN MILNE, 148, Molesworth Street, North Adelaide.
1907. \*CHAPMAN, R. W., M.A., B.C.E., Professor of Mathematics and Mechanics, University of Adelaide.
1904. CHRISTIE, W., Rundle Street, Adelaide.
1910. \*CLARK, E. V., B.Sc., Lecturer in Electrical Engineering, University of Adelaide.
1867. CLARK, M. SYMONDS, Knightsbridge.
1879. \*CLELAND, W. L., M.B., Ch.M., J.P., Colonial Surgeon. Resident Medical Officer, Parkside Lunatic Asylum.
1895. CLELAND, JOHN B., M.D., Government Bureau of Microbiology, Sydney, New South Wales.
1907. \*COOKE, T. W., D.Sc., Lecturer, University of Adelaide.
1912. CORBIN, H., B.Sc., Forest Department, Adelaide.
1907. DARLING, JOHN, Kent Terrace, Norwood.
1912. DESMOND, J., Currie Street, Adelaide.
1887. \*DIXON, SAMUEL, Bath Street, New Glenelg.
1911. DUTTON, H. H., Anlaby.
1902. EDQUIST, A. G., Tate Terrace, Croydon.
1911. GILLESPIE, H. R., 51, Angas Street.
1904. GORDON, DAVID, Gawler Place, Adelaide.
1880. \*GOYDER, GEORGE, A.M., F.C.S., Analyst and Assayer, Adelaide.
1910. \*GRANT, KERR, M.Sc., Professor of Physics, University of Adelaide.
1904. GRIFFITH, H., Henley Beach.
1896. HAWKER, E. W., F.C.S., East Bungaree, Clare.
1891. \*HOLTZE, MAURICE, F.L.S., Director Botanic Gardens, Adelaide.
1883. \*HOWCHIN, WALTER, F.G.S., Lecturer in Geology and Palaeontology, University of Adelaide.
1911. HUGHES, W. H., Booyoolie, Gladstone.
1912. JACK, R. L., B.E., Assistant Government Geologist, Adelaide.
1893. JAMES, THOMAS, M.R.C.S., Moonta.
1910. \*JOHNSON, E. A., M.D., M.R.C.S., Pirie Street, Adelaide.
1897. \*LEA, A. M., F.E.S., South Australian Museum, Adelaide.
1884. LENDON, A. A., M.D. (Lond.), M.R.C.S., Lecturer in Obstetrics, University of Adelaide, and Hon. Physician, Children's Hospital, North Adelaide.
1856. LLOYD, J. S., Alma Chambers, Adelaide.
1888. \*LOWER, OSWALD B., F.E.S. (Lond.), Broken Hill, New South Wales.
1905. \*MAWSON, DOUGLAS, D.Sc., B.E., Lecturer in Mineralogy and Petrology, University of Adelaide.
1874. MAYO, GEO. G., C.E., 116, Franklin Street, Adelaide.
1907. MELROSE, ROBERT THOMSON, Mount Pleasant.
1897. \*MORGAN, A. M., M.B., Ch.B., Angas Street, Adelaide.
1907. MURCKE, HUGO, C.E., Grenfell Street, Adelaide.
1884. MUNTON, H. S., North Terrace, Adelaide.
1886. POOLE, W. B., Savings Bank, Adelaide.
1911. POOLE, T. S., B.A., LL.B., Solicitor, Adelaide.
1908. POPE, WILLIAM, Solicitor, Adelaide.
1907. PULLINER, R. H., M.B., North Terrace, Adelaide.
1907. PURDIE, R. F., Mining Agent, St. Helen's, Tasmania.
1885. \*RENNIS, EDWARD H., M.A., D.Sc. (Lond.), F.C.S., Professor of Chemistry, University of Adelaide.

1911. ROACH, B. S., Education Department, Flinders Street, Adelaide.
1905. ROGERS, R. S., M.A., M.D., Flinders Street, Adelaide.
1869. RUTT, WALTER, C.E., College Park, Adelaide.
1891. SELWAY, W. H., Treasury, Adelaide.
1893. SIMSON, AUGUSTUS, Launceston, Tasmania.
1871. SMITH, ROBERT BARR, Adelaide.
1906. SNOW, FRANCIS H., Adelaide.
1910. \*STANLEY E. R., Government Geologist, Port Moresby, Papua
1881. \*STIRLING, EDWARD C., C.M.G., M.A., M.D., F.R.S., F.R.C.S., Professor of Physiology, University of Adelaide, Director of South Australian Museum.
1907. SWEETAPPLE, H. A., M.D., Park Terrace, Parkside.
1904. TAYLOR, WILLIAM, St. Andrew's, North Adelaide.
1897. \*TORR, W. G., LL.D., M.A., B.C.L., Brighton, South Australia.
1894. \*TURNER, A. JEFFERIS, M.D., Wickham Terrace, Brisbane, Queensland.
1889. VARDON, SENATOR JOSEPH, Gresham Street, Adelaide.
1878. \*VERCO, JOSEPH C., M.D. (Lond.), F.R.C.S., Lecturer on the Principles and Practice of Medicine, University of Adelaide, and Consulting Physician Adelaide Hospital and Children's Hospital.
1883. WAINWRIGHT, E. H., B.Sc. (Lond.), McLaren Vale.
1912. WARD, LEONARD KEITH, B.A., B.E., Government Geologist, Adelaide.
1878. WARE, W. L., Adelaide.
1859. WAY, RIGHT HON. SIR SAMUEL JAMES, Bart., P.C., D.C.L., Chief Justice and Lieutenant-Governor of South Australia, Adelaide.
1907. WEBB, NOEL A., Barrister, Waymouth Street, Adelaide.
1904. WHITBREAD, HOWARD, Currie Street, Adelaide.
1912. WHITE, CAPTAIN S. A., "Weetunga," Fulham, South Australia.
1912. \*ZIETZ, F. R., South Australian Museum.

## ASSOCIATE.

1904. ROBINSON, MRS. H. R., "Las Conchas," Largs Bay, South Australia.

## APPENDICES.

## FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia (Incorporated).

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 TWENTY-NINTH ANNUAL REPORT OF THE  
COMMITTEE

FOR THE YEAR ENDED SEPTEMBER 17, 1912.

## MONTHLY MEETINGS, LECTURES, AND ADDRESSES.

September 19, 1911.—The Annual Meeting of this Section was held on this date, when the formal business of receiving the Committee's Report and the Hon. Treasurer's Statement of Accounts was transacted. The Report of the Fauna and Flora Protection Committee was read, and the election of officers took place for the ensuing year as follows:—**FIELD NATURALISTS' COMMITTEE**—*Chairman*, Dr. R. H. Pulleine; *Vice-Chairmen*, Messrs. A. G. Edquist and J. M. Black; *Hon. Secretary*, Mr. E. H. Lock; *Hon. Treasurer*, Mr. S. S. Stokes; *Hon. Minute Secretary*, Miss E. Hocking; *Committee*, Messrs. M. S. Clark, J. Willmott, J. G. O. Tepper, and J. W. Mellor, Dr. R. S. Rogers, Mr. W. H. Selway, and Mesdames J. F. Mellor and R. S. Rogers; *Auditors*, Messrs. J. S. Lloyd and Walter D. Reed. **FAUNA AND FLORA PROTECTION COMMITTEE**—Messrs. M. S. Clark and S. Dixon, Drs. R. S. Rogers and W. Ramsay Smith, Messrs. E. Ashby, E. H. Lock, J. W. Mellor, A. Zietz, W. H. Selway, J. M. Black, and A. G. Edquist, and the Chairman and Secretary of the Section *ex officio*.

Mr. S. Dixon read a farewell address as Chairman of the Fauna and Flora Protection Committee. Mr. Dixon regretted having to resign the position of Chairman after an occupation of the position for twenty-three successive years. He wished now to make way for a younger man. He referred to the first resolution made by the late Mr. A. F. Robin that was passed by the committee twenty-three years ago as follows—"That in furtherance of the proposed objects, this Sec-

tion desires to recommend that the Government Farm (now National Park, Belair) be declared a 'public park' and handed over to Trustees to manage." Mr. Dixon mentioned what had been done in securing more adequate protective game laws, in urging Nature studies in the State schools, and in protests against the alienation of forest reserves. After further reference to the fact that Mr. James Page, of Mitcham, was practically the founder of the National Park at Belair, and that the idea had been warmly taken up by the Field Naturalists' Section, Mr. Dixon referred at length to the work that had been done to secure what is to be known as the "Flinders Chase," on Kangaroo Island, for the preservation of native fauna and flora, and put in a special plea that the Natural History scientific bodies should be the preponderating influence on the new governing body of the Chase. He referred to the necessity for a strong Society of sympathetic observers to watch over the conservation interests and for the publication of literature dealing with our Natural History. Such a Society should use its influence in the propagation and planting our own native flora in the parks, as it was unfortunate that in the landscape gardening the distinctive beauties peculiarly Australian should be sacrificed to uniform imitations of European gardens. Mr. Dixon also pleaded for about 700 acres, instead of 40, which had been set apart in the National Park for the preservation of native fauna. The address was listened to with keen attention and loudly applauded.

November 21.—The Chairman of the Section (Dr. Robert Pulleine) delivered the Annual Address, and took as his subject "Prehistoric Man." The lecturer showed a fine collection of implements, and in explaining them stated that the evolution of ideas of civilization among all races in all lands was the same. He pointed out that most people were not aware of the vastly interesting subjects they had around them in Australia, and urged a study of ethnological and anthropological works as subjects for investigation by members of the Section.

April 16, 1912.—The second course of monthly meetings for the year was begun on this date, and was devoted to the description of exhibits by members. Mr. Stokes showed flowers and ferns taken on a holiday trip to New South Wales, in the district of Ourimbah. Botanical exhibits were forwarded by Mr. Hosking from the Northern Territory. Miss Hunt tabled exhibits from New Zealand and Australia. Dr. Watson sent a specimen of a hawk-moth obtained on board a steamer at sea a day and a half distant from Booby Island. Dr. Pulleine described a ceremonial staff-sign used



by the natives of Woodlark Island, New Guinea. Mr. Stokes brought greetings from the Sydney Field Naturalists' Club, with which he had spent a pleasant excursion during his holiday.

May 21.—Captain S. A. White gave an interesting address on a visit to Kangaroo Island, especially dealing with lantern illustrations of the proposed reserve for native fauna and flora. The lecturer read some extracts of the early history of the island, and remarked that it was the only land left on the Australian coast which could be made a national sanctuary for the native birds and animals of South Australia. The land was unfit for pastoral or agricultural purposes, and the fauna was being rapidly exterminated by trappers, who even encroached on the land already reserved. He entered a strong plea for their preservation.

June 18.—Mr. A. G. Edquist (Vice-Chairman) delivered a lecture with experiments and exhibits illustrative of the life of plants. By interesting demonstrations he showed how life was maintained and plants grew on land and in water, the breathing process and food absorption receiving particular attention.

July 16.—Mr. J. W. Mellor gave an account of a journey he had taken through the north-west country from Port Augusta as far as the Tarcoola and Wilgena districts. The study of the native in this country was full of interest. A number of ornithological, botanical, and mineral specimens were tabled and explained, and photographs of the country, taken by Mr. J. W. Mellor, exhibited.

August 20.—The Chairman (Dr. Robert Pulleine) gave an address on Spiders. The lecturer dealt briefly with the classification of spiders, their anatomy and development. He spoke of their economic value to producers, and showed how they kept in check the ravages of destructive enemies to various kinds of crops. The common trapdoor spider was particularly serviceable in this respect, as it was the producers' best friend in keeping down the growth of land vermin. The means of offence and defence in poison fangs were illustrated. The methods of obtaining food and migration by webs were also shown. Hunting spiders were interesting in their habits and in their methods of securing their natural food. The lecture was illustrated by a large collection of photographs thrown upon the lantern screen.

#### EXHIBITS.

A feature of the monthly meetings was the number of exhibits tabled by members for general observation and explanation.

On June 18 Mr. A. M. Lea exhibited a case of rare butterflies and moths. Mr. Kimber showed a shell which was regarded as new to science, which he had obtained on a dredging excursion carried out by the Section in St. Vincent Gulf. Mr. J. W. Mellor exhibited specimens from the Flinders Ranges; Mr. H. H. D. Griffith, the tsetse fly, of evil repute in sleeping sickness, also fibre of *Posidonia*, which is of commercial value; Mr. J. G. O. Tepper, the base of a grass-tree from Kangaroo Island; Mr. M. S. Clark, a pearl-shell chain, 3 ft. long, without joins in the links—the chain had probably been carved out of one shell, and was 100 years old.

On July 16 Mr. J. F. Mellor showed specimens of snail shells found at Robe and recorded for the first time on the mainland of Australia. They are a European species, and were probably transported by shipping. He also showed galls formed on a sheoak log by *Coccida*. Miss Kruger tabled a beautiful bloom of a Western Australian plant which had been grown here. Mr. A. M. Lea showed and described a case of dragon flies taken during a journey to Queensland. Mr. J. G. O. Tepper exhibited a collection of photographs of the early days of Lyndoch and views of Kintore Avenue before the old trees had been removed. A large acorn barnacle from a jetty pile was shown by Mr. M. S. Clark.

Exhibits were also shown at all the meetings to demonstrate the subjects taken by the lecturers. This feature of the Section's work is exceedingly instructive and interesting, and the committee hopes that the members will continue to bring exhibits of such interest to the meetings.

The evening set apart for exhibits alone was a success, and the committee will probably make further arrangements of a like character.

#### EXCURSIONS.

The following excursions were held during the year:—October 11, 1911, Hallett's Cove; October 28, Sturt River; November 11, Montacute; November 25, Scott's Creek; March 2, 1912, Dredging Excursion in Gulf St. Vincent; May 4, Mount Lofty; June 29, Aldgate; July 20, Brighton; August 3, Norton Summit; August 17, Black Hill; August 31, Upper Sturt.

The above excursions have been well attended, except the last, which was on Wattle Day, and a number of members were engaged at the functions arranged to celebrate that occasion.

Mr. Kimber was the fortunate member this year to report a new find in excursion work, but many members have added in their own line of study valued collections and many

specimens of interest. It should be noted that a number of the members have been working, as opportunity offered, far afield in our own State and in the other States. Wherever they have travelled their collections have been carefully noted, and those who have not had the good fortune to get far away from the usual fields for work have shared in the benefit of observations and collections by others on their return at the evening meetings.

The membership of the Section has been largely added to during the year, and the evening meetings well attended.

The committee looks back upon the year's work with considerable satisfaction from scientific, collecting, and social points of view.

R. PULLEINE, *Chairman*.

E. H. LOCK, *Hon Secretary*.

## TWENTY-FOURTH ANNUAL REPORT OF THE NATIVE FAUNA AND FLORA PROTECTION COMMITTEE OF THE FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA FOR THE YEAR ENDED SEPTEMBER, 1912.

### NEW CHAIRMAN.

Your committee has to report that Mr. Samuel Dixon, after acting as Chairman for twenty-three years, had at the last Annual Meeting of this Section resigned the position and retired from the committee. Mr. Edwin Ashby was appointed Chairman in his place.

### FLINDERS CHASE, KANGAROO ISLAND

The committee is pleased to report that, though no longer one of its number, Mr. Dixon has continued to take an active interest in the work, and recently, with the President of the Royal Society (Dr. Verco), Mr. Ashby, and Captain White, waited upon the Commissioner of Crown Lands (the Hon. F. W. Young) to again urge upon the Government the desirability of further extending the area of the Reserve, the fencing off with a vermin-proof fence, the appointment of a ranger to protect the fauna and flora, and the vesting of the land in Trustees. The committee understands that the suggestions were favourably received by the Commissioner, who said he would introduce into Parliament a Bill for the purpose of carrying them out.

## THE WILD ANIMALS' PROTECTION BILL.

The committee understands that this Bill, embodying many amendments suggested by them, will shortly be laid before Parliament. When carried into law the long-desired protection for opossums can be given effect to, and it is hoped that protection may be extended to several other of our native animals. Under the Bill the only introduced animals which it is proposed to protect are deer. If at any time it should be decided to protect any others, their names can by proclamation be added to the schedule of wholly protected or to that of partially protected animals. Under the existing legislation many species of vermin might be introduced which would automatically come into the list of partially protected animals.

EDWIN ASHBY, *Chairman.*

M. SYMONDS CLARK, *Hon. Secretary.*

September 17, 1912.

BALANCE-SHEET OF FIELD NATURALISTS' SECTION OF THE  
ROYAL SOCIETY.

## DR.

	£	s.	d.
To Postages .. .. .	4	7	0
„ Printing and Advertising ... ..	5	14	6
„ Subscriptions paid to Royal Society ..	18	0	0
„ Balance in Bank . . . . .	1	6	5
	£29	7	11

## CR.

	£	s.	d.
By Balance brought forward .. .	1	5	0
„ Grant from Royal Society . . . .	10	0	0
„ Subscriptions received ... ..	18	0	0
„ Bank Interest . . . . .	0	2	11
	£29	7	11

Audited and found correct,

(Signed) W. D. REED, }  
J. S. LLOYD. } *Auditors.*

# MALACOLOGICAL SECTION

## OF THE

### Royal Society of South Australia (Incorporated).

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#### ANNUAL REPORT FOR THE YEAR 1911-12.

Eleven meetings were held during the year. There are thirteen members on the roll and there has been an average attendance of six. The members are:—Dr. Verco, Dr. Pulleine, Mrs. Robinson, Messrs. W. Howchin, F. R. Zeitz, W. D. Reed, W. J. Kimber, and F. S. Saunders, Miss Stenhouse, and Dr. Torr. The following new members have been elected this year:—Miss Robinson, Messrs. E. G. Saunders and Errol Hanley.

During the year about 140 species of shells have been identified and classified, consisting, among others, of *Haliotidæ*, *Cocculinidæ*, *Fissurellidæ*, *Stomatellidæ*, *Turbinidæ*, *Delphinulidæ*, *Cyclostrematidæ*, and *Trochidæ*. Dr. Verco is elected President for 1912-13 and Dr. Torr Hon. Secretary and Treasurer.

#### RECEIPTS AND EXPENDITURE FOR THE YEAR 1911-12.

##### Receipts.

	£	s.	d.
To Credit Balance ... ..	1	4	5
„ Subscriptions .. ..	1	15	0
„ Debit Balance .. ..	1	12	7
	£4	12	0

##### Expenditure.

	£	s.	d.
By Post Cards printed and Postages ...	1	17	6
„ Deed Box ... ..	0	19	6
„ Subscription to Royal Society ...	1	15	0
	£4	12	0

WILLIAM G. TORR,

*Hon. Secretary and Treasurer.*

# MICROSCOPICAL SECTION

## OF THE

### Royal Society of South Australia (Incorporated).

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#### ANNUAL REPORT, 1910-11.

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[*This Report was omitted from the Volume of last year's Transactions, as the manuscript was not supplied in time.—Ed.*]

OFFICERS.—*Chairman*, Mr. E. J. Bradley; *Vice-Chairman*, Mr. W. Fuller; *Committee*, Messrs. D. Gordon, B. S. Roach, and E. H. Matthews; *Auditors*, Messrs. A. G. Rendall and H. Whitbread; *Hon. Secretary*, Mr. H. W. H. Hale.

Your committee has to report that the conclusion of the eighth session of this Section since its reinstitution shows that it continues to make progress. A considerable number of new members have been enrolled, the exhibits have been numerous and varied, and some interesting papers contributed.

The following meetings were held during the year —  
 September 27, 1910.—General Annual Meeting, when an address was given by Dr Ray upon "Progress in Modern Methods in Medicine," dealing specially with microscopic research by means of dark-ground illumination and differential staining, the enquiry by means of the microscope into anti-toxins, immunizations, and hæmatological analysis.

October 25 —Meeting held at the laboratory of Veterinary Surgeon Desmond, who demonstrated his newly received Zeiss, dark-ground illuminating apparatus.

February 28, 1911.—Diatoms and Algæ, exhibited by Mr. Edquist; specimens of Anthropods, exhibited by Mr. Baker, who also showed the hydroid *Aglaophemia*. Address by the Chairman upon various Polyzoa, illustrated by mounts and specimens.

March 28.—Address by Mr. W. Fuller upon "Blood Relationships and Modern Discoveries in Hæmatology."

April 24.—Specimens of various Pulices exhibited by Mr. Bradley; mounts of *Demodex folliculorum*, taken from a case of red mange in the dog, by Mr. Desmond, who also exhibited balsam mounts of human blood, showing enormous macrophages. Mr. Fuller showed mounts of the blood of the

Murray turtle containing Hæmatozoa; and Mr. Showell exhibited specimens of larva and imago of midge.

May 23.—Mr. Baker showed mounts of *Astracella*, an isopod exhibiting protective mimicry.

June 27.—A committee was appointed to deal with the question of a laboratory.

August 22.—A discussion as to the future arrangements of the meetings was held, and it was decided that a less formal method of procedure should be adopted. Mr. Bradley exhibited mounts of the feather mite of the magpie and of the feathers of the humming bird, and demonstrated an electric-motor turntable, designed and made by Mr. Rendall.

EDGAR J. BRADLEY, *Chairman*.

#### BALANCE-SHEET, SESSION 1910-11.

Receipts.				£	s.	d.
To Subscriptions, 1910-11	...	...	...	6	2	6
„ Grant from Royal Society, 1910-11	...	..	..	5	17	6
				£12	0	0
Expenditure.				£	s.	d.
By Subscription, 1910-11, paid to Royal Society				5	17	6
„ Stationery, Printing, etc., 1910-11	..	...	...	2	17	6
„ Cash in Hand	...	...	...	3	5	0
				£12	0	0

EDGAR J. BRADLEY, *Chairman*.

Audited and found correct with Vouchers produced—

ALEXR. G. RENDALL, {  
HOWARD WHITBREAD, { *Auditors*.

September 25, 1911.

#### ANNUAL REPORT, 1911-12.

OFFICERS.—*Chairman*, Mr. W. B. Poole: *Vice-Chairman*, Mr. W. Fuller: *Committee*, Messrs. B. S. Roach, D. Gordon, and W. H. Baker: *Auditors*, Messrs. A. G. Rendall and H. Whitbread: *Hon. Secretary*, Mr. E. J. Bradley.

Your committee has to report that the ninth session, now concluded, has shown continued progress of the Society. A number of new members have been enrolled. A feature of this session has been the abandonment of the more formal method of having papers and the adoption of the system of

"Conversation Meetings," so that the evenings during the session with two exceptions have been devoted to exhibits of objects of interest, etc., and discussions by the members thereon. The innovation has proved successful.

June 25 was devoted to a public lecture on the poultry tick (*Argas persicus*) by Mr. D. C. F. Laurie, Government Poultry Expert, the appreciation of the public being shown by an attendance of about 300 members and visitors.

At the Section's suggestion the Royal Society has purchased a microscope for the use of the affiliated sections. The instrument is a Watson's Circuit No. 1 Van Heurck microscope stand with substage, and fittings for polariscope and holoscopic eyepiece.

The following meetings have been held during the year:—

September 26, 1911.—Annual General Meeting. Election of officers and a paper by Mr. W. H. Baker on "Some Crustacean Parasites"; also exhibit of pond-life specimens from Blackwood by Mr. E. J. Bradley.

October 24.—Conversation Meeting. Mr. Desmond exhibited "Culpepper-Scarlett" microscope, dated 1740. Mr. W. B. Poole exhibited rotifers, *Philodenia* (sp. ?). Rev. T. Ward exhibited "commercial" microscopic slides sent out by dealers in London. Amazement was expressed that such unsatisfactory slides should be sent out by reputable dealers.

November 28.—Mr. W. H. Baker exhibited mounts of small insects cleared with chloral and phenol (equal parts). Mr. Bradley exhibited parasites on the aphids of orange-trees. Mr. W. B. Poole exhibited mounts of Diatoms, and initiated a discussion on mountings in media of high refractive indices.

March 26, 1912.—Mr. Desmond exhibited Botriocephalous worms, *Ligula replans* (*sparganum*), from the subcutaneous tissues of a fox and cow. Mr. Fuller exhibited Bausch & Lomb's 1912 model student's microscope. Mr. Bradley exhibited specimens illustrating the life history of the *Anopheles* mosquito from the River Torrens.

April 23.—Mr. Poole exhibited mounts of "Thrip," and slides of Diatoms from Pomonky, U.S.A., mounted by Mr. Showell, of Renmark. Mr. Bradley exhibited insect preparations and gave particulars for making preparations with the caustic potash method of maceration. Mr. Broughton exhibited petrological preparations. Mr. Desmond exhibited specimens of the red-tailed larva of the botfly of the horse, and also specimens of a new parasite of the fox (*Dibotriocephalus latus*).

May 28.—Mr. Poole exhibited *Gamasus coleoptratorum*, a parasite on the dung beetle. Mr. Bradley exhibited four species of Gamasids obtained as parasites on the dung beetle



(*Onthophagus mninzechi*); also mounts of the ferment fly (*Drosophila*, sp. ?), found hovering over decaying fruit, and of the larva of the red-tailed botfly of the horse.

June 25.—The Section adjourned the ordinary business for this evening and invited the general public to a lecture on the "Poultry Tick" by Mr. D. C. F. Laurie.

July 23.—Mr. Poole exhibited "arranged" mounts of Diatoms by Mr. Showell, of Renmark. Mr. Fuller exhibited section of the aorta of King Pharoah (Menephtah, the Pharoah of the Exodus), presented to the Adelaide University by Dr. Angas Johnson, and received by him from Dr. Arthur Keith, Curator of the Museum of the Royal College of Surgeons. Mr. Desmond exhibited specimens of *Hæmatopinus*, sp.—a species of louse from the sheep, considered by him to be new.

August 27.—The new microscope for the use of the Royal Society and the Sections, a Watson's Circuit No. 1 Van Heurck, was exhibited, and its use explained by Mr. Bradley. Mr. Huston exhibited a grand model Bausch and Lomb's microscope. Mr. Baker exhibited slides of *Cumacea* (sp. ?), and also mounted mites. Mr. Bradley exhibited various specimens of gamasids and dipterous insects from Broken Hill; also "natural" dissection of lingual ribbon of a species of limpet from Bass Straits.

W. B. POOLE, *Chairman*.

#### BALANCE-SHEET, SESSION 1911-12.

Receipts.		£	s.	d.
To Cash handed over by outgoing Hon. Secretary		3	5	0
.. Subscriptions, 1911-12 ..	...	4	5	0
.. Grant from Royal Society, 1911-12 ..	...	4	5	0
		£11	15	0
Expenditure.		£	s.	d.
By Stationery, Postage, and Printing, 1911-12		3	12	3
.. Subscriptions paid to Royal Society ..	...	4	5	0
.. Cash in Hand ...	...	3	17	9
		£11	15	0

EDGAR J. BRADLEY, *Hon. Secretary*.

Audited and found correct with Vouchers produced—

ALEXR. G. RENDALL, } *Auditors*.  
HOWARD WHITBREAD, }

September 24, 1912.

## GENERAL INDEX.

[Generic and specific names printed in *italics* indicate that the forms described are new.]

- Acacia tarculensis*, 171.  
*Acanthochites asbestoides*, 158; *bednalli*, 159; *cornutus*, 161; *costatus*, 163; *crocodilus*, 161; *exilis*, 162; *granostriatus*, 159; *kimberi*, 167; *matthewsi*, 160; *maughani*, 162; *rubrostratus*, 169; *rufus*, 167; *speciosus*, 159; *tatei*, 163; *variabilis*, 160; *wilsoni*, 162.  
*Acmea alticostata*, 183, 197; *calamus*, 184, 199; *calamus* var. *polyactina*, 184, 199; *conoidea*, 198; *flammea*, 183, 198; *marmorata*, 184; *patellavecta*, 195; *septiformis*, 184, 199; *subundulata*, 185, 199.  
*Anas superciliosa*, 178.  
*Anchithyrus caliginosus*, 88; *reticulatus*, 88.  
*Anchovies* from the Glenelg River and Port Willunga, 240.  
*Anchusa capensis*, 24.  
*Ancilla mucronata*, 231; *oblonga*, 230.  
*Aneomides hirticollis*, 44.  
*Anilaus costirostris*, 103.  
*Annual Meeting*, 245; *Report*, 246.  
*Aponogeton distachyum*, 25.  
*Argobuccinum australasia*, 220.  
*Ashby, E.*, Exhibits of Birds, 239, 243.  
*Asterolasia muricata*, 22.  
*Atholurus*, 43.  
*Australian Monitor*, *Observations on Habits of*, 26.  
*Austrectopsis*, 130; *A. oblongus*, 131.  
*Balance-sheets*, 248, 249.  
*Bartsia viscosa*, 172.  
*Black, J. M.*, *Additions to the Flora of South Australia*, 21, 171.  
*Blackburn, Rev. Canon*, *Further Notes on Australian Coleoptera, with Descriptions of New Genera and Species*, 40.  
 — *Biographical Notice, v.*; *List of Species named by*, xiii.; *Obituary Notice by President*, 240.  
*Brachyporopterus vermiculatus*, 110.  
*Broughton, A. C.*, *Some Occurrences of Silica near Mount Painter*, 173.  
*Cainozoic Outlier in the River Light*, 14.  
*Caernisiis*, 133; *C. opalescens*, 134.  
*Calamintha Nepeta*, 24.  
*Caledoniella contusiformis*, 207.  
*Calliostoma hedleyi*, 207.  
*Callistochiton antiquus*, 150.  
*Callochiton mayi*, 164; *platessa*, 142; *rufus*, 142.  
*Carum sioides*, 22.  
*Cassidea adcocki*, 217; *pyrum*, 217; *semigranosa*, 217.  
*Cassis limbriata*, 216.  
*Cedilauis*, 83; *C. ambiguus*, 84.  
*Chenopodium ambrosioides*, 24, *opulifolium*, 172.  
*Chiton aureo-maculata*, 155; *bednalli*, 154; *calliozona*, 151; *exoptandus*, 153; *jugosus*, 152; *limans*, 153; *oruktus*, 154; *torrianus*, 152; *tricostalis*, 151; *verconis*, 154.  
*Cistus hirsutus*, 22.  
*Clanculus leucomphalus*, 207.  
*Coleoptera, Australian*, 40.  
*Cossonus incisus*, 139.  
*Crepidula immersa*, 207.  
*Cryptoplax striatus*, 163.  
*Curculionidae, Descriptions of Australian*, 76.  
*Cymatium rubicundum*, 218; *verrucosum*, 218; *vespaceum*, 219.  
*Cymbium flammeum*, 229.  
*Cyprea pulicaria*, 210; *reevei*, 210; *thersites*, 209; *umbilicata*, 211; *umbilicata, var. armeniacae*, 211, 213.  
*Diptera, New Australian, from Ants' Nests*, 233.  
*Dry Creek, Recurrent Transgressions of the Sea at*, 34.  
*Ducks, Wild Hybrids of Australian*, 178.  
*Dynastides*, 67.  
*Ecildaus*, 123; *E. glabricornis*, 125; *melancholicus*, 125; *personatus*, 124.  
*Edentellina typica*, 238.  
*Eragrostis minor*, 172.  
*Eremophila subfloccosa*, 172.  
*Eruca sativa*, 171.  
*Eufautia*, 117; *E. mirabilis*, 118.  
*Euphorbia falcata*, 25.  
*Euryporopterus tenuifasciatus*, 111.  
*Exithioides*, 116; *E. punctatus*, 116.  
*Exithius brevis*, 115; *conspiciendus*, 113; *ferrugineus*, 112; *inamabilis*, 115; *loculosus*, 113; *sculptilis*, 114.

- Fasciolaria australasia. 222.  
 Fellows. Members, etc. List of. 261.  
 Ficus tessellatus. 218.  
 Field Naturalists' Section. Annual Report, etc. 264.  
 Flora of South Australia. Additions to the, 21. 171.  
 Fusus novæ hollandiæ. 221.  
 Geraldton (Western Australia). List of Shells received from. 201.  
 Germanica. 74.  
 Glyptoporopterus. 90; *G. asper*. 91.  
 Goodenia modesta. 172.  
 Grant, Kerr. and G. E. M. Jauncey. Ionization produced by the Impact of Solid Bodies in Air. 1.  
 Grass. An Insect-catching. 240.  
 Grevillea quinquenervis. 25.  
 Gymnoporopterus. 136; *G. pictipes*. 137.  
 Gyriuncum ranelloides. 219.  
 Hackeria viridivaria. 76.  
 Haliotis albicans. 185. 200; conicopora. 187. 200; cyclobates. 188; elegans. 186. 200; emmæ. 189; iris. 187; nævosa. 186; parva. 190; pulcherrima. 190; roei. 188. 200; rugoso-plicata. 190; tricostralis. 190. 200.  
 Helcioniscus illibratus. 181. 192; limbatus. 182; tramsericus. 181.  
 Helichrysum cinereum. 171.  
 Helipterum floribundum var. *tubulipappum*. 23; pterochætum. 171.  
 Hemipleurotoma quoyi. 231.  
 Heteronyx cribripennis. 45; *difficilis*. 47; *johannis*. 46.  
 Heterozona. 144.  
 Hibbertia acicularis, var. *sessiliflora*. 21; *sericea*, var. *major*. 21.  
 Haplodictyus. 84; *H. marmoratus*. 85.  
 Hordeum maritimum. 172.  
 Howchin, W.. An Outlier of Older Cainozoic Rocks in the River Light. 14.  
 — Notes on Recurrent Transgressions of the Sea at Dry Creek. 34.  
 — Exhibits: Turquoise from Mount Painter. 239; geological ripple marks. 239.  
 Illidgia. 92; *I. 16-tuberculata*. 93.  
 Imaliodes frater. 87; *oripennis*. 86; *scitulus*. 86.  
 Ionization produced by the Impact of Solid Bodies in Air. 1.  
 Ischnochiton bakeri. 169; *bednalli*. 166; *cariosus*. 144; *contractus*. 145; *crispus*. 144; *fruticosus*. 145; *gryei*. 149; *juloides*. 143; *levis*. 168; *novæ-hollandiæ*. 150; *pallens*. 143; *pilsbryanus*. 143; *pilsbryi*. 144; *ptychius*. 147; *resplendens*. 149; *smaragdinus*. 148; *sulcatus*. 146; *tateanus*. 147; *thomasi*. 149; *ustulatus*. 144; *variegatus*. 146; *virgatus*. 148; *wilsoni*. 147.  
 Ischnoradsia. 150.  
 Jauncey, G. E. M. (see Grant and Jauncey).  
 Johnson, Dr. E. A., Exhibit: Part of an Egyptian Mummy. 243.  
 Knab, F. and J. R. Malloch. New Australian Diptera from Ants' Nests. 233.  
 Lea, A. M., Descriptions of Australian Curculionidae. 76.  
 — Exhibits: weevils. 238; an insect-catching grass. 240; wasps' nests. 243; biscuit beetle. 244; ant commensals. 244; hippoboscids fly from wallaby. 244; contents of birds' stomachs. 245.  
 Leeuwenhoekia Sonderi. 24.  
 Lepidiota borilli. 54; *caudata*. 60; *deceptrix*. 59; *franchi*. 58; *gilesi*. 62; *koebeleri*. 54; *leai*. 57; *negatorius*. 63; *perkinsi*. 56; *rubrior*. 55; *suavior*. 56; *townsillensis*. 61; Table of Species. 63.  
 Lepidoderna. 52; Table of Species. 53.  
 Lepidopleurus inquinatus. 141; *matthewsianus*. 142; *pelagicus*. 165.  
 Leucopogon hirtellus, var. *glabrifolius*. 24.  
 Library. Donations to. 250.  
 Light, Older Cainozoic Rocks in River. 14.  
 Limosina myrmecophila. 236.  
 Linaria græca. 25.  
 Linum strictum. 21.  
 Liparetrus confusus. 43.  
 Liparochrus geminatus. 41; *hackeri*. 40.  
 Lloyd, J. S., Retirement from Office as Auditor. 245.  
 Loboplax. 160.  
 Lorica volvox. 155.  
 Loricella angasi. 155.  
 Macrophyllides. 65.  
 Malacological Section. Annual Report, etc. 270.  
 Malloch, J. R. (see Knab and Malloch).  
 Mandalotus bicarinatus. 77; *foveatus*. 76; *incisus*. 80; *latus*. 79; *niger*. 80; *ruptus*. 78; *sabulosus*. 80; *severini*. 80; *tinuicornis*. 78.  
 Microcala quadrangularis. 172.  
 Microcryptorhynchus cylindricollis. 138; *echinatus*. 137.

- Microdon bruchycerus*, 235. *daveyi*, 235.  
 Microscopical Section. Annual Reports, etc. 271.  
 Mollusca. South Australian Marine, 181.  
 Mount Painter, Notes on Silica from, 173.  
*Myrtesis nasuta*, 104; *pullata*, 105.  
*Nacella crebrestrata*, 183, 195. *crebrestrata*, var. *roseoradiata*, 183, 195; *parva*, 183, 194; *stowæ*, 183, 195.  
*Nassaria torri*, 220.  
 Native Fauna and Flora Protection Committee, 268.  
*Neodeciliaus*, 81. *N. gratus*, 82. *picus*, 81.  
 Neospades, 72.  
*Nettion gibberifrons*, 178.  
*Notaculiceps*, 126; *N. punctipinnus*, 127. *rarus*, 128.  
*Notoplax*, 160, 162.  
 Officers. Election of, 245.  
*Omydaus confusus*, 96. *contractus*, 94; *impressicollis*, 95; *subfasciculatus*, 94.  
*Onidistus subformicatus*, 119.  
*Onithochiton ashbyi*, 151.  
*Ornithogalum arabicum*, 25.  
*Orobanche Mutelii*, 25.  
*Ouraporopectus*, 109; *O. diurus*, 109.  
*Ovula philippinarum*, 216.  
*Paletonidistus*, 122; *P. trisinuatus*, 122.  
*Paracrepidomenus*, 74.  
*Paralepidiota lepidoptera*, 51.  
*Patella aculeata*, 182, 194; *axiocrata*, 193; *hepatica*, 194; *neglecta*, 192; *stellæformis*, 182, 194; *ustulata*, 182, 193.  
*Phasianella australis*, 206.  
*Phenacolepas alboradiata*, 185, 200; *calva*, 185, 199.  
*Plantago Bellardii*, 25.  
*Plaxiphora albidia*, 156; *costata*, 157; *matthewsi*, 157.  
 Polyplacophora, South Australian, 140.  
*Poroptereulus*, 99; *P. subnitidus*, 100.  
*Poropterellus*, 89; *P. intercoxalis*, 90.  
*Poropterinus*, 98; *P. trilobus*, 98.  
 Proceedings, Abstract of, 238.  
*Prochelyna heterodoxa*, 42; *rubella*, 42.  
*Pseudomydaus*, 96; *P. tenuis*, 96.  
*Pseudonidistus*, 120; *P. cordatus*, 121.  
*Pteroporopectus*, 100; *P. lacunosus*, 101.  
 Rhopæa, 50.  
 Ripple-marks, Geological, 239.  
*Roctoperus occidentalis*, 133; *terræ-reginæ*, 132.  
 Rules and By-laws, Alteration of, 243.  
 Rutelides, 66.  
*Salvia horminoides*, 24; *verbeuca*, 24.  
*Scaphella dunnivigi*, 225; *fulgetrum*, 222; *papillosa*, 228; *roadnightæ*, 226, 239; *translucida*, 225; *undulata*, 222; *verconis*, 224.  
*Schismope atkinsoni*, 191, 201; *pulchra*, 191, 201.  
*Schismus fasciculatus*, 25.  
*Scissurella australis*, 191.  
*Scleranthus minusculus*, 24.  
 Sea at Dry Creek, Recurrent Transgressions of, 34.  
*Senecio odoratus*, var. *obtusifolius*, 24.  
 Shells, Western Australian Marine, 192; from Great Australian Bight, 206.  
 Silica, from Mount Painter, 173.  
*Siliquaria anguina*, 209; *australis*, 208; *weldii*, 209.  
*Siphonalia dilatata*, 221.  
 South Australia, Additions to Flora of, 21, 171; marine mollusca of, 181.  
*Spatula rhynchotis*, 178.  
*Sporobolus indicus*, 25.  
*Statice psiloclada*, 24.  
*Stenochiton*, 143.  
*Stethaspis sternalis*, 48; Table of Species, 50.  
 Stirling, E. C., Habits of Australian Monitor and a Note on the 'Fat Bodies' of these Reptiles. 26.  
 Exhibit: Recent and fossil examples of *Varanus giganteus*, 243.  
*Tanacetum boreale*, 172.  
*Tentegia quadriseriata*, 102; *tortipes*, 102.  
*Tepulicus*, 107; *T. semicalvus*, 108.  
*Terporopus*, 129; *T. tenuicornis*, 129.  
*Tetengia*, 106; *T. solenopa*, 106.  
*Tonna variegata*, 216.  
 Torr, W. G., South Australian Polyplacophora, 140.  
*Trivia australis*, 215.  
 Turquoise from Mount Painter, 239.  
*Turritella runcinata*, 208.  
*Varanus giganteus*, 26.  
 Vegetation, Discussion on the Influence of Metallic Minerals on, 238.  
 Verco, J. C., Notes on South Australian Marine Mollusca, with Descriptions of New Species, 181.  
 — Notes on the Marine Shells of Western Australia, with Descriptions of New Species, 192.

Verco, J. C., Shells from the Great Australian Bight, 206.

--- Exhibits: *Edentellina typica*, 238; *Scaphella roadnightiae*, 239; a new Volute and *Cominella torri*, 240; *Cypræas* and *Scaphella fulgetrum*, 244, *Voluta papillosa*, 245.

*Vermicularia flava*, 208.

*Veronica arvensis*, 172.

*Vicia gracilis*, 22.

Weevils, Life History of, 238.

Western Australia, Marine Shells of, 192, 206.

*Zenoporopectus*, 135; *Z. mirus*, 135.

Zietz, F. R., Descriptions of Wild Hybrids of Australian Ducks, 178.

--- Exhibits: Anchovies from the Glenelg River and Port Willunga, 240; *Aplysia* from Port Lincoln, 240; Sub-fossil, *Turbo stamineus*, from Brentwood, Y.P., 244.

Zietzia, 65.

PLATES I. TO XVI.



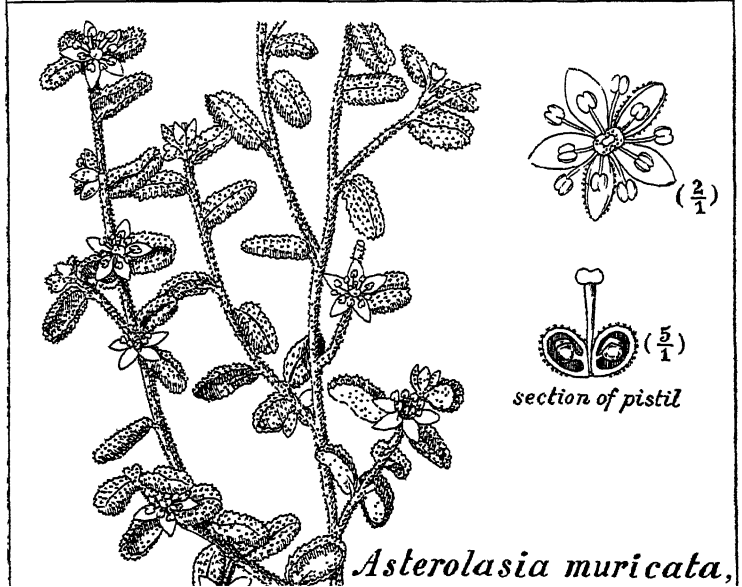
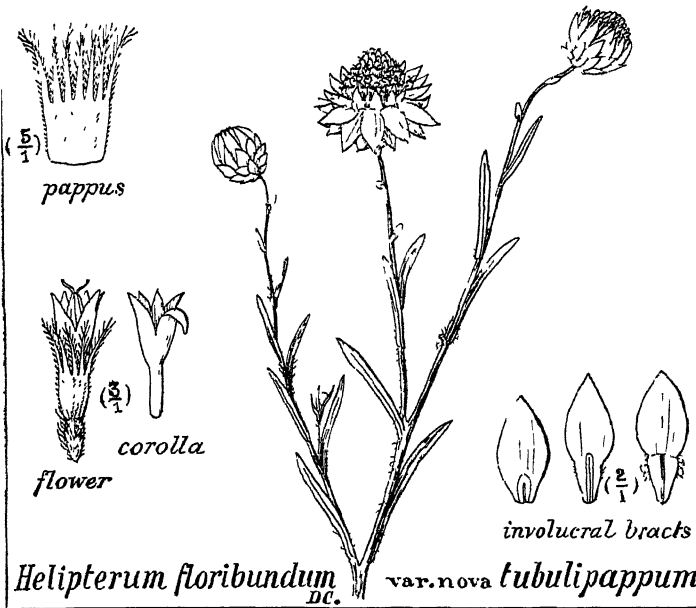


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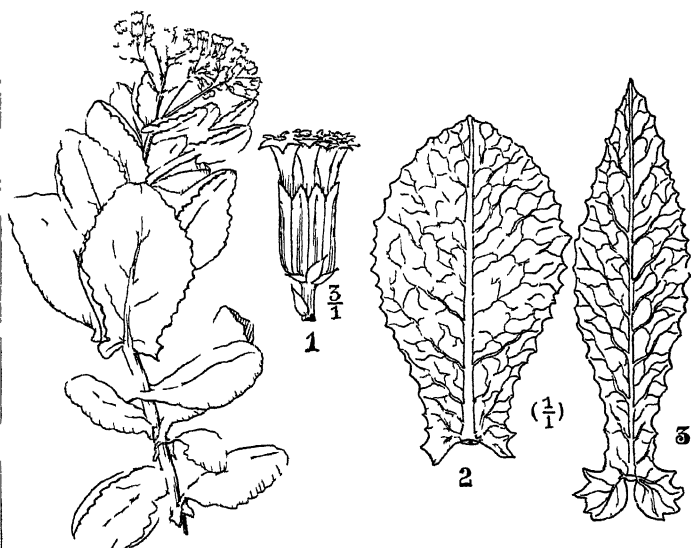
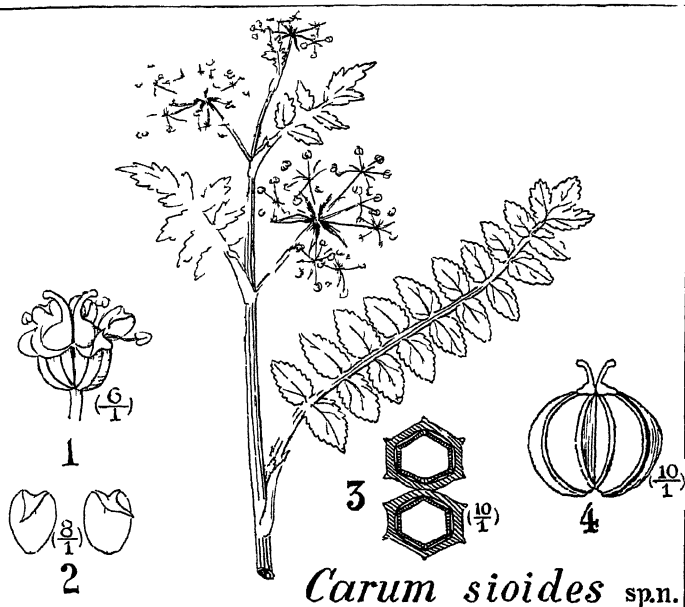
Washout in Red Banks, River Light The ledge where bag and hammer rest is upper limit of Canino/010 outcrop









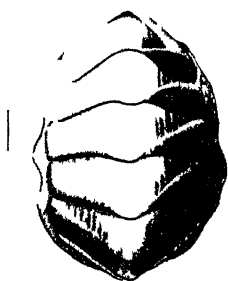


*Senecio odoratus*, Hornem., var nov *obtusifolius*.









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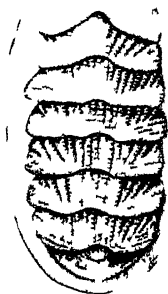
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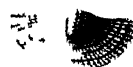
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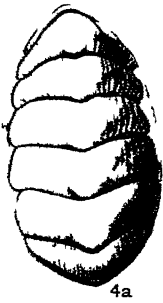
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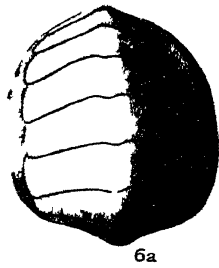




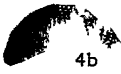
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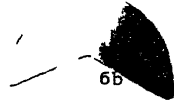
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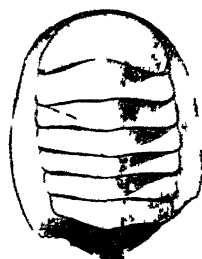
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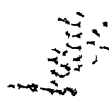
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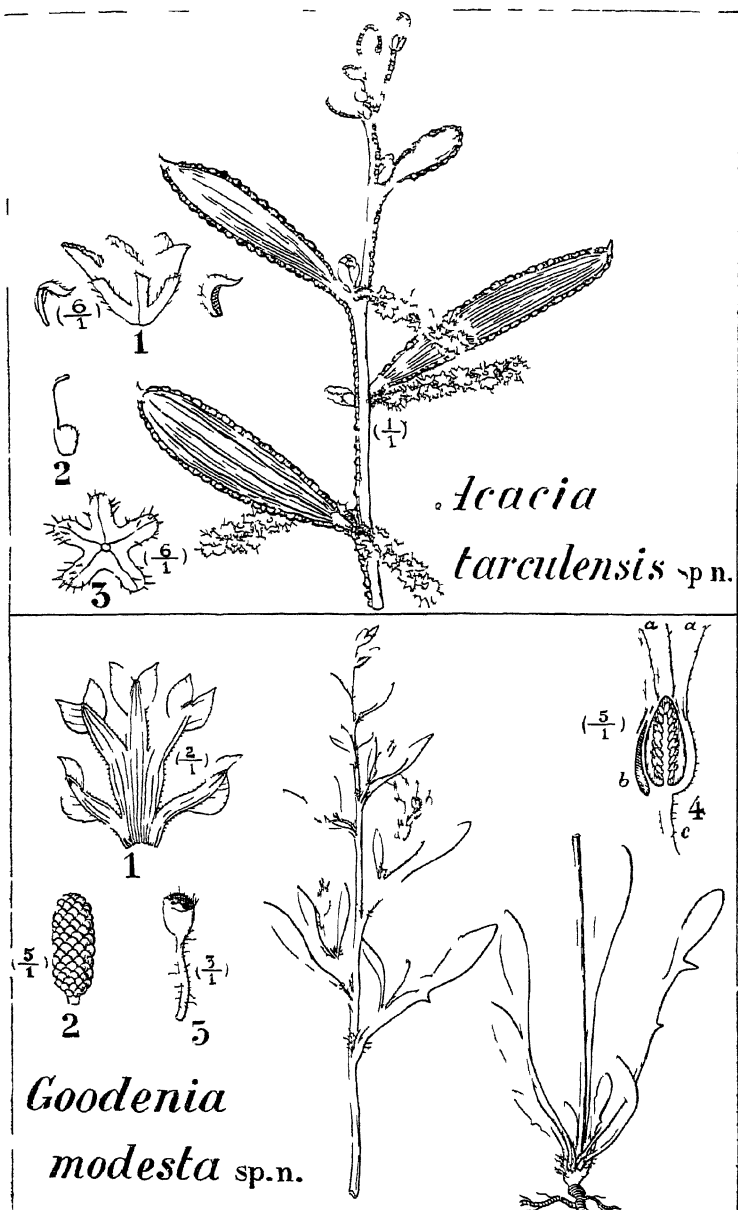


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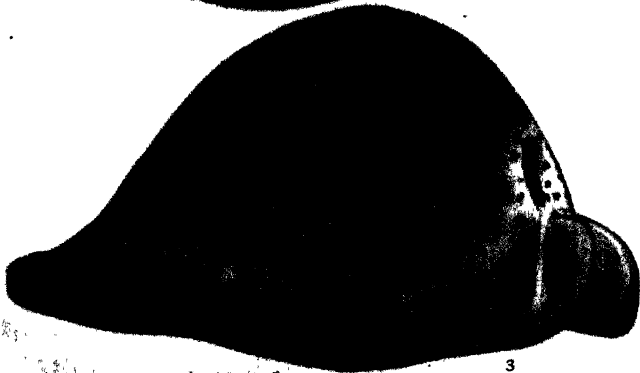
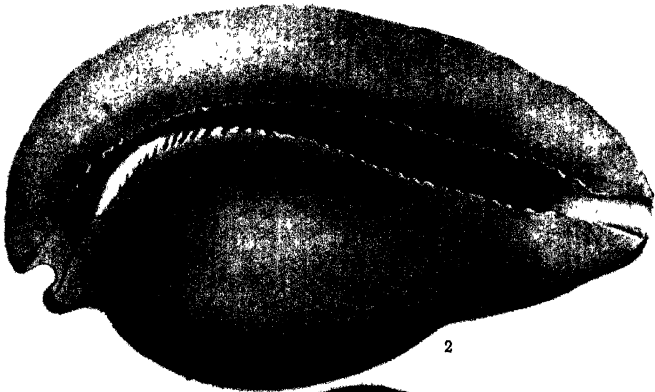
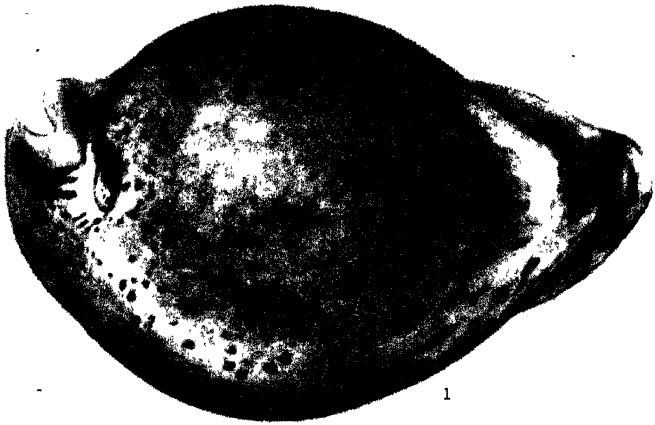


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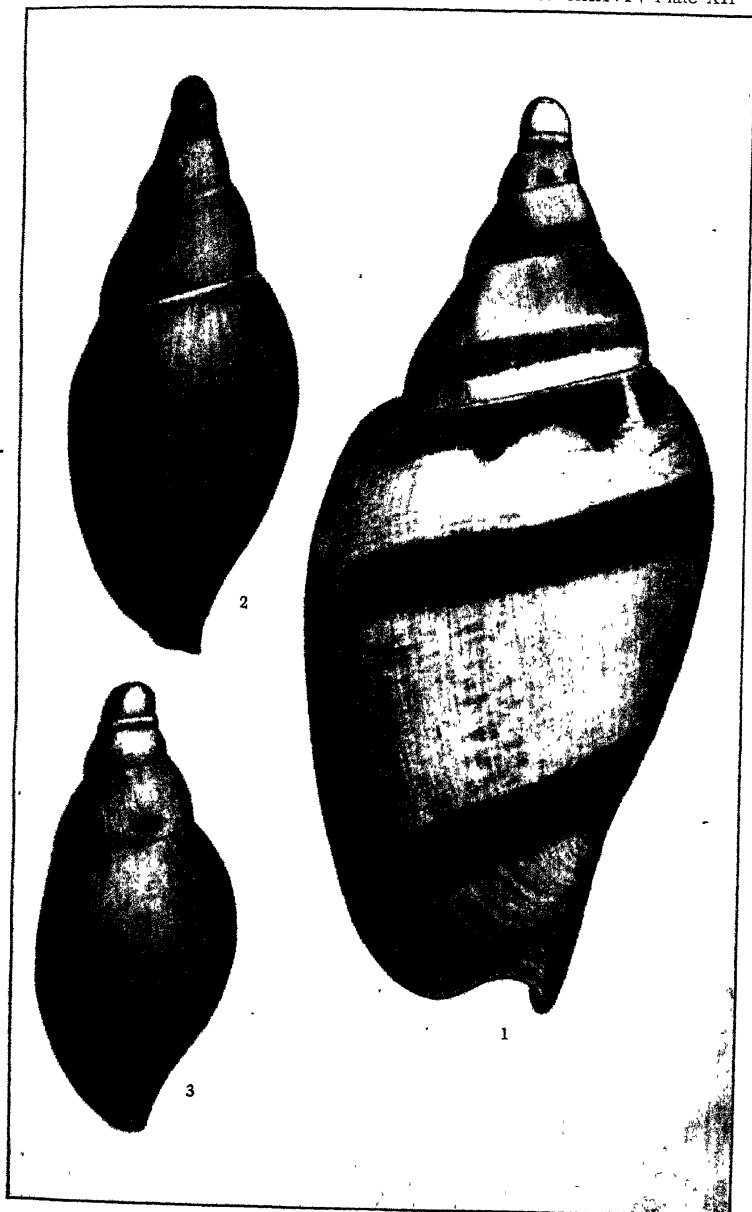


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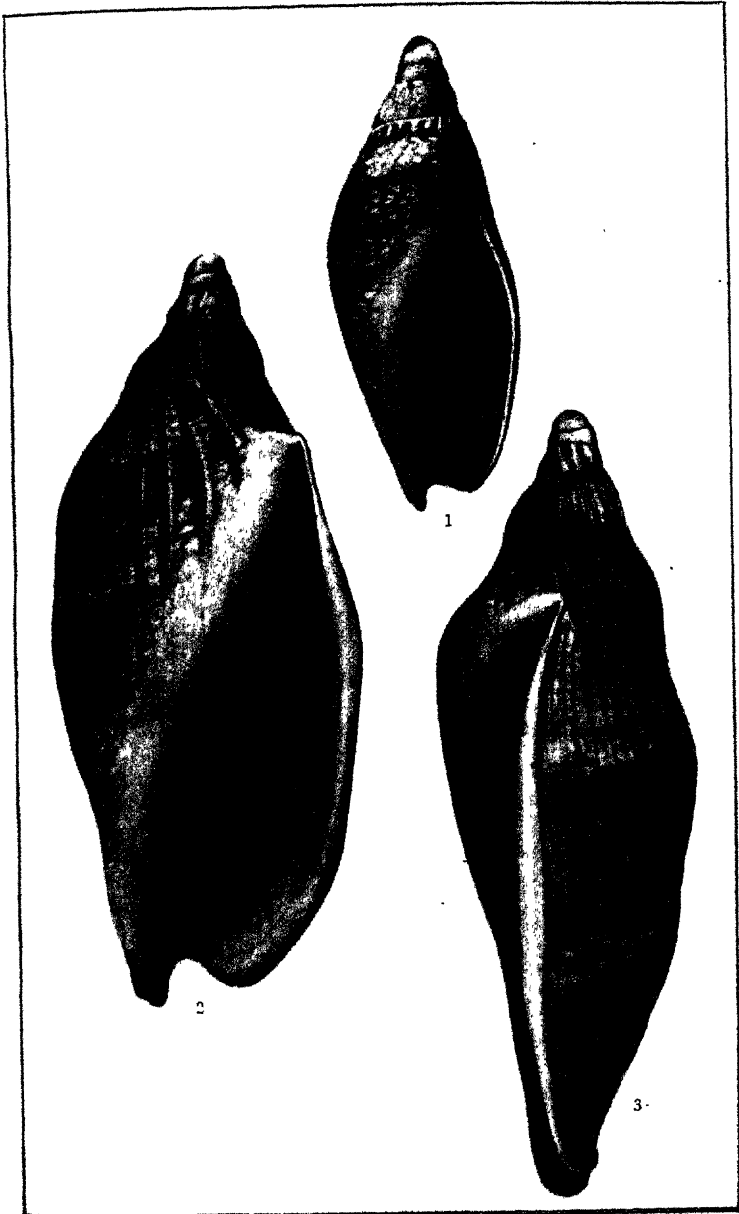
















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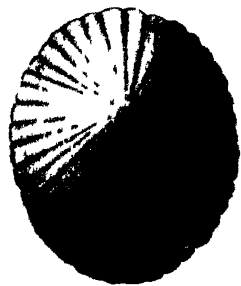
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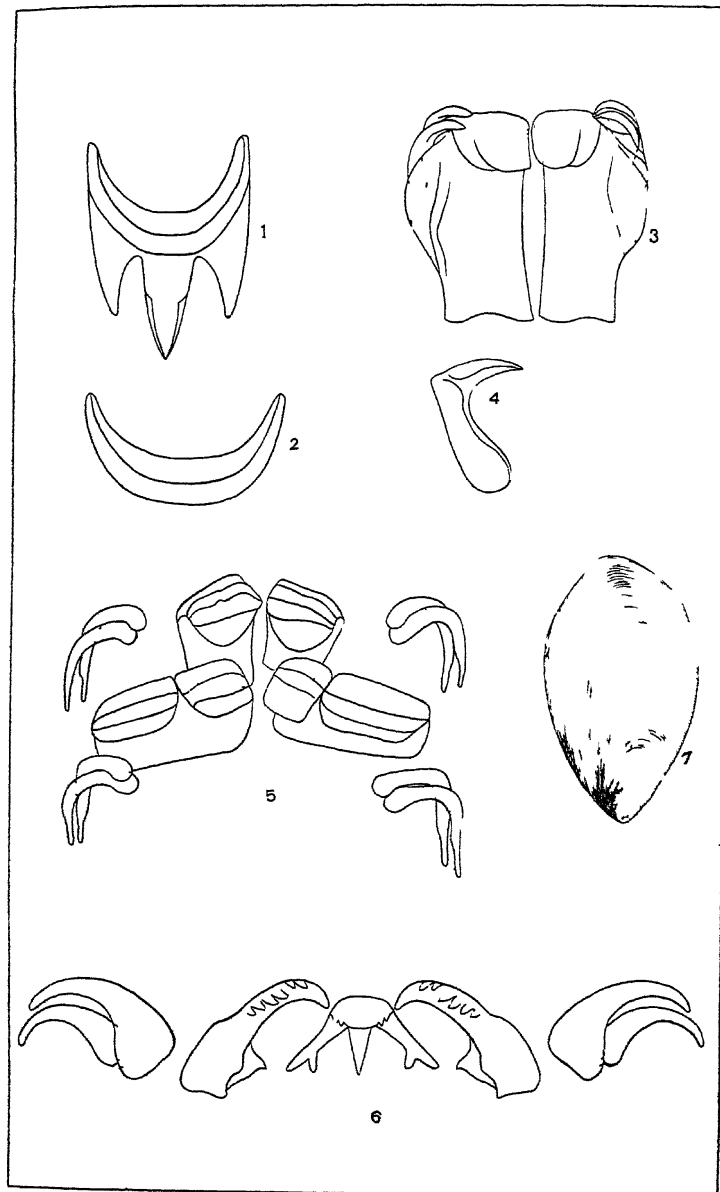


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TRANSACTIONS AND PROCEEDINGS  
OF THE  
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27 APR 1914

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# CONTENTS.

	Page
BLACK, J. M. The Flowering and Fruiting of <i>Pectinella antarctica</i> Plate i. . . . .	1
CARTER, H. J.. Notes and Tabulation of the Australian Amarygminæ (Family Tenebrionidæ), with Descriptions of New Species . . . . .	6
ROGERS, DR. R. S.. Mechanism of Pollination in certain Australian Orchids. Plates vi to ix. . . . .	48
GIRALTT, A. A.: A New Genus of Chalcidoid Hymenoptera of the Family Mymaridæ from Tasmania . . . . .	65
——— New Genera and Species of Chalcidoid Hymenoptera in the South Australian Museum . . . . .	67
BAKER, W. H.: On Three Species of Isopod Crustacea found in the Nests of Ants in South Australia. Plates ii and iii. . . . .	116
BLACK, J. M.: Additions to the Flora of South Australia. No. 7. Plates iv. and v. . . . .	121
ROGERS, DR. R. S.: Additions to South Australian Orchidæ . . . . .	125
DODD, A. P.. Australian Hymenoptera: Proctotrypoidea. No. 1 . . . . .	130
LEA, A. M.. Notes on Cryptorhynchides (Coleoptera Curculionidæ) in the South Australian Museum, with Descriptions of New Species . . . . .	182
——— Descriptions of Australian Curculionidæ, with Notes on Previously Described Species. Part xi. . . . .	301
VERCO, DR. J. C.: Note on <i>Harpa (Eoethara) punctata</i> . . . . .	446
——— Note on <i>Lasius scalaris</i> , Phillipi . . . . .	448
ABSTRACT OF PROCEEDINGS . . . . .	450
ANNUAL REPORT . . . . .	460
GRANTS IN AID OF SCIENTIFIC RESEARCH . . . . .	461
BALANCE-SHEETS . . . . .	464, 465
DONATIONS TO LIBRARY . . . . .	466
LIST OF FELLOWS, ETC. . . . .	478
APPENDICES—	
Field Naturalists' Section: Annual Report, etc. . . . .	481
Twenty-fifth Annual Report of the Native Fauna and Flora Protection Committee of the Field Naturalists' Section of the Royal Society . . . . .	488
Malacological Section: Annual Report, etc. . . . .	489
Microscopical Section: Annual Report, etc. . . . .	490
GENERAL INDEX . . . . .	492



THE FLOWERING AND FRUITING OF PECTINELLA  
ANTARCTICA (CYMODOCEA ANTARCTICA).

By J. M. BLACK.

[Read April 10, 1913.]

PLATE I.

**Pectinella**, *gen. novum*. Flores unisexuales, solitarii, basi vaginante foliorum inclusi; flos masculus nudus: antheræ 2, quadriloculares, leviter cohærentes, pedunculo communi insertæ, polline filamentoso; flos femineus sæpius bracteolis membranaceis plus minus connatis absconditus; carpella gemina, non pedicellata sed pedunculo communi inserta, in stylum attenuata, stigmatibus 3 capillaribus; carpellum fructiferum subdrupaceum, mesocarpio carnosio, endocarpio corneo, in lobos 4 truncatos rigidos productum, itaque perianthium quadrilobatum simulans; embryo mox intra fructum apice ramuli persistentem germinans et per basin fissam styli procedens, demumque pericarpio emacerato quadripartito et pectiniformi cinctus ad fundum maris descendens et ibi radicans. Folia alterno-disticha, caules nonnulli repentes, ad nodos radicanes. Herbæ submarinæ.

This genus differs from any other in *Potamogetonaceæ* in the structure of the anthers, the hard 4-lobed framework of the fruiting carpel, and the peculiar mode of reproduction.

**Pectinella antarctica**. Herba submersa, floribus dioicis, foliis apice lunatis, antherâ a basi valvis 3 dehiscente, connectivo in acumina gemina producto, uno carpello sæpe abortivo.

This plant has already received nine different names:—*Amphibolis zosterifolia*, Agardh; *Caulinia antarctica*, R. Br.; *Cymodocea antarctica*, Endl.; *Cymodocea zosterifolia*, F. v. M.; *Graumuellera antarctica*, Reichb.; *Kernera antarctica*, Schult.; *Posidonia antarctica*, Spreng.; *Ruppia antarctica*, Labill.; *Thalassia antarctica*, F. v. M. This multiplicity of names is chiefly due to the flowers remaining unknown for so long.

It grows in salt water along the coasts of Victoria, South Australia, and Western Australia, and was first recorded by Labillardière, the botanist of the expedition sent by Louis

XVI. in 1791 to search for La Pérouse. His specimens, obtained near Cape Leeuwin, W.A., were in leaf only, and judging by analogy, he named and figured them as *Ruppia antarctica* in his *Nova Hollandiæ Plantarum Specimen*, ii., p. 116, tab. 264, published in 1806. Charles Gaudichaud, botanist to Freycinet's voyage of discovery, 1817-1820, collected the same plant at Shark Bay, W.A., and this time male flowers were found and described (*Voyage autour du Monde: Botanique*, p. 430, tab. 40, fig. 2).

No further investigations seem to have been made with regard to this plant for many years, until Mr. J. G. O. Tepper, a Fellow of this Society, acting on the suggestion of Baron von Mueller, collected specimens at Ardrossan, and gave the result of his researches in two papers read before the Royal Society in 1880, the first being entitled "Some Observations on the Propagation of *Cymodocea antarctica*, Endl." (Trans. Roy. Soc., S.A., iv., 1-4 and 47-49, plates 1 and 5). Mr. Tepper does not appear to have found the male or young female flowers, but the conclusion at which he arrived is, I think, justified by the facts. It was "that the plant does not at all develop a fruit proper, nor does the seed ever become dissociated from its plant, but that the fertilized ovum at once germinates and develops into a new plant, which at maturity is detached, and begins an independent cycle of existence." The object of the present paper is to supplement the observations made by Mr. Tepper over thirty years ago.

Mr. Tepper forwarded his paper and specimens to Professor P. Ascherson, of Berlin, who replied that in the "fruits" he could find "nothing of the organs of a pistillate blossom, seeds," etc., and he considered the process to be purely one of vegetative reproduction (Trans. Roy. Soc., S.A., v., 37). In the same letter Ascherson states that he had seen one specimen of the female flower submitted by Baron von Mueller. This must have been a very young flower, and the fact that the 4-lobed comb is the final stage of the female flower was overlooked.

The theory of vegetative reproduction seems to have been accepted by botanists ever since 1880. P. Ascherson, speaking of *Cymodocea antarctica* in Engler and Prantl's *Natürliche Pflanzenfamilien*, ii., 1, 195-6 (1889), summarizes the supposed process as follows:—"An ordinary foliage leaf [at the summit of a leafy shoot] is succeeded by a scale-leaf or 'comb-leaf,' whose median plane is transverse to that of the foliage-leaf. To this scale-leaf are added other leaves in normal distichous succession. By destruction of its softer parts the strongly developed mechanical tissue of the new comblike, incised scale-leaf is set free; beneath its insertion the end

of the shoot divides, anchors itself firmly by means of the comb-leaf, takes root and grows into a new plant."

A. Kerner, in his *Natural History of Plants*, ii., 807 (English ed. 1895) says:—"Towards the close of the winter the end of the stem above the leaves is seen to become peculiarly modified. Its internodes become much contracted, and at the lowest node is developed a scale-leaf with 4 lobes, which surrounds the leaves developed from the upper nodes, like a cup. Buds arise in the axils of one or two of these leaves, while the leaves themselves die and decay. The parenchyma of the 4-lobed, cup-shaped scale-leaf also decays, and only its stiff veins remain, so that instead of the cup there are now only comb-like scales. After this alteration has taken place, the tissue of the stem below the pectinate scales breaks across, and the whole shoot-apex, separated from the lower part of the stem, which has long been in a leafless condition, is carried away by the currents of the water."

The views expressed by these eminent authorities will require considerable modification when it is realized that the new plant springs, not from any reduced leaf or scale-leaf, but from the female flower itself.

At the beginning of this year Mr. H. H. D. Griffith called my attention to this plant, which grows beyond low-water mark at Henley Beach, and is often cast up on the shore. He succeeded in finding several male flowers and also the female flower in such various stages of growth as enabled us to trace its gradual development up to the "comb." The flowers are dioecious, and both male and female grow at the end of rather short branches, sheltered by the broad sheaths of the two uppermost leaves. The males have no other protection, and consist of two 4-celled anthers on a common peduncle. Each anther opens from below in 3 valves and emits the threadlike pollen-cells, which float about in the water until they find the slender stigmas of the female flower. This consists of twin carpels on a common peduncle, one carpel often abortive. Like the males, they are at first sheltered in the leaf-sheath, but they have also in most cases a row of membranous bracteoles, often united in the shape of a cup which completely encloses the flower. As soon as fertilization has taken place the long stigmas break off, and without any period of rest the embryo begins to grow and the fruit to form. Four small truncate lobes, which have appeared about the middle of the carpel, increase rapidly in size and spread outwards, assuming the appearance of a perianth. Fleshy on the outside, they soon develop a horny inner framework, whose short, tubular part forms the innermost layer of the pericarp and protects the growing embryo. Nourished by the albumen stored about its base, the embryo

soon reaches the summit of the fruit. In the meantime the base of the style has split into two parts, and through the aperture the plumule emerges into the water. The soft tissue of the pericarp decays, probably by a sort of maceration in the sea water, and there remains only a 4-lobed comb, each lobe cut into 10-20 subulate teeth, and the hardened tube gripping the base of the embryonic plant. The comb breaks away from the end of the branch and sinks to the bottom, where the teeth of the lobes catch in the fibres of *Posidonia australis*, or in other material lying on the sea-floor, and so anchor the new plant while it roots and grows.

There are still several points which require clearing up, such as the history of the ovule in the very young carpel, which has not yet been seen. At the fall of the stigmas, the embryo already occupies nearly the whole of the ovary, and the integuments of the ovule seem to have been absorbed, perhaps in the store of albumen. Or it may be that the pollen finds great difficulty in reaching the stigmas, and that in order to ensure reproduction of the species, the ovary develops a bud in place of an ovule, as is said to occur sometimes in *Crinum* and *Amaryllis*. Against this hypothesis are the facts that the growth in the ovary resembles an embryo, that the anthers are fertile, and that no fruits of a different and more normal character have been found. Nor do we yet know what period elapses between the emergence of the embryo from the fruit and the fall of the comb, but probably flowering takes place from September to January, and the young plants are firmly rooted before the beginning of winter.

It is also probable that there are two forms of *P. antarctica*. One, very numerous at Henley Beach, and which may be considered the type, has shorter leaves (sheath, 8-10 mm. long; blade, 12-35 mm. long), and a much rarer variety, found at the same place, has longer leaves (sheath, 15-20 mm.; blade, 40-70 mm.). No male flowers or young females of the type were found, January being apparently too late for them, but both were gathered on the long-leaved variety, which flowers later, and the development of the carpel, apart from the fact that the membranous bracts are fewer, although rarely quite obsolete, is exactly the same as in the short-leaved form.

There are certain analogies between the fruiting of *Pectinella* and that of two genera of a distant family, the *Rhizophoraceæ*. In *Rhizophora* (the tropical mangrove) there is likewise no seed in the ordinary sense of the term, as the embryo germinates in the fruit while the latter is still growing on the tree, and without a period of rest; in *Bruguiera* the similarity is increased by the fruit itself falling to the ground along with the growing embryo.

## EXPLANATION OF PLATE I.

*Pectinella antarctica.*

- Fig. 1.—Vertical section of female flower at about the same stage as fig. 2.
- „ 2.—Young female flower (from long-leaved variety).
- „ 3.—Female flower after fertilization (from short-leaved form).
- „ 4.—Female flower further advanced, with one abortive carpel.
- „ 5.—Vertical section of same.
- „ 6.—The same, still further advanced: *a, a*, anterior and smaller lobes; *b, b*, posterior lobes; *c*, membranous bracts, few and scattered in fig. 1, obsolete in fig. 2, united in a cup in figs. 3, 4, 5, and 6, but cut back in 4 and 5; *d, d*, hornlike processes growing on the upper part of the carpel and perhaps helping to shelter the emerging embryo; *e*, style of abortive carpel; *f*, style of fertile carpel; *g*, embryo with plumule emerging from fruit; *j*, horny tissue of carpel, which becomes the comb; *k*, embryo in earlier stage; *l*, albumen surrounding lower part of embryo.
- „ 7.—The quadripartite comb.
- „ 8.—Embryo.
- „ 9.—Embryo further developed: *h*, cotyledon; *i*, plumule; *m*, hypocotyl.
- „ 10.—Male flower enclosed in leaf-sheath (long-leaved variety).
- „ 11.—Transverse section of anthers.
- „ 12.—Anthers opening.
- „ 13.—A pollen-cell.
- „ 14.—Young plant rising from the comb and rooting itself.
- „ 15.—Branch with female flower at summit.
- „ 16.—Transverse section, showing anthers dehiscing in 3 valves and practically 1-celled through absorption of the partitions.



NOTES AND TABULATION OF THE AUSTRALIAN AMARYGMINÆ (FAMILY TENEBRIONIDÆ), WITH DESCRIPTIONS OF NEW SPECIES.

By H. J. CARTER, B.A., F.E.S., Corresponding Member.

[Read April 10, 1913.]

In 1892-3 Mr. Blackburn published his revision of this group, and rendered a notable service to our knowledge of this numerous and little-known sub-family, by giving an elaborate tabulation thereof. Since that date Mr. Blackburn has himself described several species, Herr Gebien has described seven, and the author now proposes to add twenty-two more. Further, a good deal of information has been available to the author, especially in access to the Macleay types and a visit to the Hope Museum at Oxford in 1907, so that it is now possible to correct some of the unavoidable inaccuracies made in the revision referred to above, while it is hoped that future workers will find some assistance in the present notes and tables towards a more complete accuracy. Mr. Blackburn's table is sometimes obscured by the use of characters inconsistent with his descriptions, e.g., *C. inconspicuus* is placed amongst species "with ocular sulcus," whereas in the description he says "sulcis ocularibus nullis." Again with *C. longiusculus* his table says "interstices convex and impunctulate," whereas in the description he says "interstitiis rotundo-elevatis sparsim subtilissime elevatis" (*sic*); the last word being presumably a misprint for "punctatis."

In the tabulation, given below, the author has differed materially from Mr. Blackburn's system—(1) In attempting what is hoped will prove a simpler scheme for identification of species: (2) in paying less regard to the "ocular sulcus" as a character that is clearly defined in but few species: (3) in paying more consideration to colour—especially of the pronotum; with one or two specified exceptions in the species having a black pronotum that character is constant, and therefore forms a convenient character for division in a large genus; where, however, the "ocular sulcus" is well defined it has been also utilized: (4) the ratio of length to breadth is a generally constant character, and serves admirably for tabulation; some hundreds of measurements have been made to prove this, and the author would suggest the term "*rational index*" to denote this ratio.

Mr. Blackburn's corroboration of Blessig's separation of *Amarygmus* from *Chaleopterus* is amply confirmed by the

author's dissection of a large number of specimens, which show that in all cases examined the species recognized by Blackburn as *Amarygmus* have bifid mandibles, while in *Chalcopterus* the apex of the mandibles is evenly truncate. The statement that "there are few specimens in which the mandibles are so hidden that there is the least difficulty in discerning their form" is only true in the larger species, or in the smaller ones if the mandibles happen to be widely extended. Otherwise it is generally necessary to dissect the head, or at least to extend the mandibles, after relaxing the specimen. The author's determination of species has been greatly facilitated by the valuable help given by the late Rev. Canon Blackburn in the loan and gift of co-types, the determination of others, as also by that learned entomologist's valuable memoirs on the subject. An immense number of specimens have been examined, including the valuable collections in the following museums:—Macleay and Australian Museums, Sydney; National Museum, Melbourne; the South Australian Museum, Adelaide; Queensland Museum, Brisbane; the Musée d' Histoire Naturelle, Brussels; the four first of which contain many types or co-types named by Blackburn himself. The author would take this opportunity to thank for the courtesy the late Mr. G. Masters, Mr. Rainbow, F.E.S., Mr. J. A. Kershaw, Mr. A. M. Lea, F.E.S., Dr. Hamlyn-Harris, D.Sc., for their help, and especially Mr. Lea and Mr. C. French, the former for the loan of his fine collection and the gift of many duplicates and the latter for the gift of many new and rare species, as also Mr. H. Griffith, of Adelaide, Mr. A. Giles, F.E.S., of Perth, and Dr. E. W. Ferguson, of Sydney, for much assistance. Lastly, I am indebted to the courtesy of Mr. C. O. Waterhouse for comparing specimens sent to the British Museum with types and for his valuable notes thereon.

Since writing the above, I have had the very valuable co-operation of Mr. K. G. Blair, of the British Museum, who has been able to examine and compare the respective types of Fabricius, Hope, Pascoe, and Blackburn, and who has been good enough to send me copious notes on the species examined. Further, and more valuable still, the authorities of the British Museum have permitted Mr. Blair to send me a large number of specimens, including many that have been compared with these types, so that it is now possible to clear almost the whole group from the clouds of uncertainty. My very cordial thanks are due for the courtesy of the British Museum authorities, and especially to Mr. Blair for this timely assistance and for his permission to use his notes.

## CHALCOPHTERUS, NOTES ON DESCRIBED SPECIES OF

*C. puncticollis*, Hope. Specimens from South Perth were compared with type by Commander J. J. Walker, R.N., M.A., who writes that they are identical. Below is given a description taken from a specimen compared with the type.

*C. opacicollis*, MacI. In the Australian Museum are the Gayndah types, though, as was the unfortunate custom with Sir W. Macleay, they are not specially marked as types. Under the label *C. opacicollis*, MacI., are two specimens which are *two different species*. Denoting these by A and B respectively, A has the prothorax purple and blue (the former predominant), the elytra variegated, suture golden, then purple, green, and again golden-metallic at the sides, the seriate punctures are larger than in B, with the intervals distinctly punctate, and tarsal vestiture black. In B the prothorax is metallic-black, the elytra blue, with purple at the suture and golden-green at the sides, the seriate punctures smaller than in A and subelongate, the intervals scarcely perceptibly punctate, while the tarsal vestiture is red. A is the species considered by Blackburn as *C. opacicollis*. It is one of the commonest species in South Queensland and Northern New South Wales, and is probably *C. rinosus*, Pasc., and *C. resplendens*, Boisd. B is the species described by Blackburn as *C. hunterensis*. From Macleay's description the words "Thorax brassy-black, opaque, and minutely punctate," "Elytra . . . of a purplish colour, becoming green towards the sides . . . eight rows of small, closely-placed, subelongate punctures" clearly point to B as the type described, since the seriate punctures in A are not at all elongate, and the thorax is not at all black.

*C. grandis*, MacI. In Blackburn's table, this is placed under the group with "tarsal vestiture black." The type specimen has the tarsal vestiture *yellow*.

*C. obsoletus*, MacI. = *C. fastuosus*, Germ. There are some slight colour distinctions, and the Queensland specimen is rather larger than specimens (identified as *C. fastuosus* by Blackburn) from South Australia. *Confluens*, Blkb., is the same species, the distinction drawn by its author is, I think, only individual variety.

*C. rufipes*, MacI. The type specimen has the pronotum distinctly dark-blue (described as having "thorax black"). It is of a much darker shade than that of the elytra. The tarsi are black above, clothed with reddish hair. Specimens from Cunnamulla, given me by Mr. Lea, are identical. A specimen compared with type of *nigritarsis*, Pasc., proves its synonymy with that species.

*C. picipes*, MacI. There are two specimens under the label, but evidently the same species. The elytra are green, with larger seriate punctures than in *C. rufipes*, the tarsi are piceous above, clothed below with pale-red or yellow hair. I have specimens taken near Brisbane by myself, others from Narromine (N.S.W.) taken by Mr. Sloane, that correspond exactly with Macleay's type, and also with the description of *C. jucundus*, Blkb. I cannot agree with Mr. Skuse's opinion given in the note by Blackburn (Proc. Linn. Soc., New South Wales, 1893, p. 87) as to the identity of *C. picipes*, MacI., and *C. rufipes*, MacI. The prothorax varies in colour from blue-black to green. Of a specimen of *picipes*, MacI., sent to Mr. Blair he writes: "Type (of *jucundus*, Blkb.) is larger and stouter, but agrees with this specimen in punctuation and in more nitid surface than in '*nigritarsis*.'"

*C. imperialis*, Blkb. The tarsi are nigro-setose, with a few reddish hairs interspersed. Mr. Blackburn placed it amongst those with flavo-setose tarsi in his tabulation. My specimens are from Marmor, Queensland, given me by Mr. H. Brown.

*C. variabilis*, Bless., and *C. sulcipennis*, Hope, were omitted by Gebien in the new catalogue of Junk (Berlin). The former is a very common species in New South Wales, Victoria, and Tasmania. The latter is identical with *C. suturalis*, Pasc. (*vide infra*).

*C. setosus*, Blkb., is not very appropriately named, since the setæ are extremely fine, especially on the upper-surface. In the co-type lent me by Mr. Blackburn, the setæ could be seen only on the epipleuræ, in other specimens they are visible (with a lens) on the elytra. It is a large, very robust species, brightly metallic-green, with large punctures of a much darker colour—generally blue—but I have one specimen in which these punctures are purple. *C. nobilis*, Blkb., of which I have seen a co-type in the Melbourne Museum, is much more evidently setose, though the fact is not mentioned in the description. There is also a mistake as to locality in the case of *setosus*. This is given as Victoria in the description. All the specimens I have seen (and they are many) have come from Cairns or other parts of North Queensland; Mr. Blackburn's co-type was labelled Thursday Island. *C. nobilis*, Blkb., has much larger punctures in the elytral series, and much finer (scarcely evident) punctures on the pronotum; otherwise the two species are very similar.

*C. perlongus*, Blkb. In description the elytra are said to be "sat seriatim punctulatis, interstitiis planis." A

co-type given me by Mr. Blackburn has the elytra substriate, with distinctly convex intervals.

*C. amethystinus*, Fab. Mr. Blair says that the type in the Banks collection has black femora, but other specimens labelled by Hope have red legs; but this may be the effect of age. Certainly a specimen sent with a label "Pasc. coll." is ticketed "*amethystinus*, Fab.," while another very ancient specimen bears an old label "*Erotylus amethystinus*, Fab.," and both of these agree with specimens identified by myself from North Queensland as *amethystinus*, Fab., and is the same species Blackburn considered as Fabricius' species. It has red femora, but darker tibiae, and a blue pronotum. On the other hand, the specimen sent by Mr. Blair as agreeing "very nearly with the type" has a black pronotum, and is evidently *C. laevicollis*, Bless. = *caelestis*, Pasc. = *cyanipennis*, Hope, which is quite inconsistent with Fabricius' scanty description. There is also a difficulty as to the tarsal clothing. Blackburn places it amongst those with black tarsal vestiture. I find, in examining many specimens, that, like *C. imperialis*, Blkb., it has both red and black setae on its tarsi, the front and intermediate being generally rufo-setose, while the posterior tarsi are nigro-setose. I find I have placed it amongst the "flavo-setose" group in my tabulation. If placed under the "nigro-setose" it would stand next to *michaelseni*, Geb., from which it is easily separated by its almost impunctate elytral intervals.

#### SYNONYMY.

1. *C. vigilans*, Blkb. = *C. semiticus*, Pasc. = *C. triangularis*, Haag. = *C. cupricollis*, Hope = *C. smaragdulus*, Fab.
2. *C. cupripennis*, Germ. (nec Hope) = *C. sumius*, Blkb. (var.) = *C. howitti*, Pasc. = *C. affinis*, Bless. = *C. columbinus*, Boisd. (?)
3. *C. laticollis*, Blkb. = *C. colossus*, Blkb. (var.).
4. *C. confluent*, Blkb. = *C. obsoletus*, Macl. = *C. fastuosus*, Germ.
5. *C. vnericus*, Gmel. = *C. cupreus*, Fab.
6. *C. froggatti*, Blkb. = (?) *C. semiseriatus*, Blkb. (var.) = *C. cupripennis*, Hope.
7. *C. hunterensis*, Blkb. = *C. opacicollis*, Macl.
8. *C. blackburni*, Geb. = *C. interioris*, Blkb.
9. *C. bicolor*, Geb. = *C. viridicollis*, W. S. Macl.
10. *C. arthuri*, Blkb. = *C. intermedius*, Blkb.
11. *C. meyricki*, Blkb. = *C. iridiventris*, Blkb. (var.).
12. *C. jucundus*, Blkb. = *C. picipes*, Macl.
13. *C. rufipes*, Macl. = *C. nigritarsis*, Pasc.

14. *C. celestis*, Pasc. = *C. lævicollis*, Bless. = *C. cyanipennis*, Hope.
15. *C. similis*, Blkb. = *C. longipennis*, Hope.
16. *C. opacicollis*, Blkb. (*nec* MacL.) = *C. vinosus*, Pasc. = *C. resplendens*, Boisd. (?).
17. *C. suturalis*, Pasc. = *C. sulcipennis*, Hope.
18. *C. longipennis*, Blkb. (*nec* Hope) = *C. cyaniventris*, Cart. (*nov. sp.*).
19. *C. rugosus*, Germ. = *C. puncticollis*, Hope.
20. (?) *C. cræsus*, Blkb. = *C. mercurius*, Blkb.

The last named in each case has the priority, though in the case of Boisduval's species, *columbinus* and *resplendens*, their determination is too doubtful to allow their names to stand.

*C. cupreus*, Fab., was wrongly determined by Blackburn. The species determined by Blackburn as *cupreus* I have described as *C. maximus*.

*C. cupricollis*, Hope. Mr. Blair has examined the type from Melville Island, and writes: "*Cupricollis*, Hope = *semiticus*, Pasc. = *maragdulus*, Fab. *Cupricolle* type is unique in the peculiar purplish-bloom almost concealing the green on the elytra and still more marked on the thorax." (It is a common species in Northern Australia, of which I have seen a large number, which are either green or coppery, as in Pascoe's description of *semiticus*. A specimen labelled *vigilans* by Blackburn in the South Australian Museum is of the latter colour, and cannot be distinguished from *semiticus*, Pasc.—H. J. C.)

*C. cupripennis*, Hope. It is satisfactory to set at rest this much-disputed name. Mr. Blair writes: "*Cupripennis*, Hope = *froggatti*, Blkb. The two types agree much more nearly with each other than they do with specimens sent." This determination also agrees with (1) my own notes taken at the Hope Museum, (2) note by Champion quoted by Blackburn (*Proc. Linn. Soc., N.S.W.*, 1893, p. 70), (3) notes sent me by Commander J. J. Walker. Germar was evidently mistaken in his determination, and Blackburn was misled by this. I believe *C. semiseriatus*, Blkb., to be doubtfully distinct from this, though distinguished in Blackburn's table by the "ocular sulcus." I have a specimen determined by Blackburn which has a small "*sulcus*," but the specimen sent by Mr. Blair compared with type is identical with the *C. cupripennis*, Hope, sent.

*C. laticollis*, Blkb. I cannot consider this more than a geographical variety of *C. colossus*, Blkb. I have specimens from Queensland which differ exactly as the author states; the prothorax in *colossus* is often very transverse.

With regard to the species described by Gebien, there is nothing in his description to distinguish *C. blackburni*, Geb., from *C. interioris*, Blkb.; nor is there any doubt in my mind as to the identity of *C. bicolor*, Geb., with *C. viridicollis*, W. S. Macl., an unusually vividly-coloured and distinct insect. Gebien describes the thorax as "steel-blue," while Macleay's type, which I have examined, has the thorax a dark rich-green, of a kind that is to be little distinguished from some shades of blue.

*C. tenuicornis*, Geb., must be very near *C. longulus*, Blkb., and *obscurus*, Blkb. (which may be only a variety of *longulus*), but its apparently impunctate elytral interstices and some differences in the antennæ would appear to distinguish these; while *longulus* can only be distinguished from *longipennis*, Hope (see below), by its slightly differently shaped prothorax and the stronger interstitial punctures of elytra.

*C. rugosus*, Germ. = *C. puncticollis*, Hope. Germar seems to have considered *rugosus* as synonymous with *sulcipennis*, Hope, but Mr. Blair tells me that the last is identical with *suturalis*, Pasc., a species whose interstices of elytra are almost impunctate. The size of *rugosus*, "magnitudine præcedentis" (the disputed *cupripennis*, Germ.), and the words "crebre transversim rugulosa" as applied to the elytra point to *puncticollis*, Hope, rather than to *sulcipennis*.

*C. longipennis*, Hope, was wrongly identified by Blackburn. Mr. Blair writes: "*Longipennis* agrees with *similis* in all the differences mentioned [by Blackburn in his description of the latter.—H. J. C.]. He was no doubt led astray by Hope's leaving Adelaide as the suggested locality for *longipenne* in spite of 'S.R.' on his own label." I therefore propose the name *cyaniventris* for the Adelaide species described by Blackburn as *longipennis* (Proc. Linn. Soc., 1892, p. 456). The specimen sent me, as compared with type of *similis*, Blkb., and *longipennis*, Hope, has a black pronotum, as stated by Hope, the same being vari-coloured metallic in *cyaniventris*, a fact not noted by Blackburn in his description of *similis* when giving its distinctions from the Adelaide species.

*C. meyricki*, Blkb., is apparently only distinguished from *C. iridiventris*, Blkb., by the presence of a "sat augusto" ocular sulcus in the description, the same said to be "foveiform" in the table. My specimen of *C. meyricki* was compared with a specimen from the Elder Expedition in the South Australian Museum labelled by Blackburn. The ocular sulcus is scarcely defined, and is unsatisfactory as a distinguishing character in this case.

*C. arthuri*, Blkb., seems to me only a variety of *C. intermedius*, Blkb., if my specimens are correctly identified. I have *C. arthuri* taken in Brisbane and compared with co-types in Mr. Lea's collection. These exactly correspond with specimens of *C. intermedius*, Blkb., sent by Mr. Blair, compared with type.

*C. vinosus*, Pasc., is the species identified for me by Blackburn as probably *C. resplendens*, Bois., but on what evidence I do not know.

*C. suturalis*, Pasc. = *C. sulcipennis*, Hope, *fide* Blair, who has compared the types.

*C. cræsus*, Blkb. Mr. Blair notes the slight difference in the width between the eyes of *cræsus* and *mercurius*, together with some colour difference, but he concludes: "Should be inclined to doubt specific distinction of *cræsus* and *mercurius*, but have only unique type of each."

*C. simius*, Blkb. I cannot consider this otherwise than a variety of the widely-distributed *C. affinis*, Bless. Like all common species the varieties are very puzzling, and I have often seen specimens of *affinis* that correspond to the description of *simius*. This is confirmed by the specimen which Mr. Blair sends as compared with type of *simius*, which I have no hesitation in calling *C. affinis*, Bless.

The following are the descriptions of the new species:—

#### CHALCOPTERUS CUPRIVENTRIS, n. sp.

Elongate ovate, head and pronotum bronze-green (the former sometimes more obscure), elytra purple (sometimes with coppery reflections), with the suture and punctures green, prosternum black, rest of the under-side metallic-green or copper, coxæ and base of femora reddish, legs black, tarsal vestiture yellow.

*Head* closely punctate, eyes distant the length of basal joint of antennæ and bordered by a fine sulcus, antennæ with joint three equal to fourth and fifth combined, seventh to tenth successively longer and thicker than the preceding, eleventh more elongate but narrower than tenth. *Prothorax* truncate at apex, slightly sinuate at base, twice as wide at base as at apex, sides arcuately converging to apex, anterior angles widely obtuse, posterior (seen from above) acute, irregularly but distantly punctate with indications of a smooth medial line. *Scutellum* triangular, greenish, smooth. *Elytra* convex, subparallel, wider than prothorax, striate punctate, punctures on middle series small, larger on lateral series, rather closely set (about four punctures to the width of an interval), intervals flat on disc, very slightly convex towards sides, minutely but evidently



punctate; *metasternum* channelled and punctate, depressed near base; *abdomen* rugosely punctate. *Dimensions*—15-18 × 7.5-9 mm.

*Hab.*—Queensland: Townsville (F. Dodd).

Seven specimens examined, sent by Mr H. Griffith, of Adelaide; also in Brussels Museum. The combination of large size, uniform coloration of elytra, flavo-setose tarsi and metallic pronotum and underside makes this species easy to determine. It is, perhaps, nearest *C. leai*, Blkb., and *C. relutinus*, W. S. Macl.; but *C. leai* (of which I have seen co-types) is differently coloured with much coarser sculpture of elytra, while *relutinus* (of which I know the type) has the under-side black eyes more approximate *inter alia*. In general form it is near *C. longulus*, Blkb., *C. leai*, Blkb., and *C. brevipes*, Blkb. The striæ are not deep, but evident when viewed sideways, and give an elongate appearance to the punctures, which are placed and are of the same average size as in *C. iridicolor*, Bless., though finer in the middle series. The metallic colour of the punctures is not constant, though strongly marked in four of the specimens.

#### NOTE.

*C. cupreus*, Fab. The above species is very near *cupreus*, Fab., and is the insect sent by Mr. Blair as the nearest he could find to the Fabrician type. Mr. Blair writes on the subject of *cupreus*:—"Type remains unique. Compared with enclosed it is somewhat smaller ( $15 \times 7\frac{1}{2}$  mm.), and I should say a little less elongate, though as the elytra are rather widely open it is difficult to judge. The pronotum is less convex, punctured about as strongly, though more sparingly, the punctures becoming smaller and sparser anteriorly; in colour it has a tarnished appearance, broadly blue round the margins shading into purple, and greenish on the disc, this is probably largely due to age, it is semi-opaque as in specimen; the elytra are a little more nitid, shining coppery and brassy, and blackish towards the apex; they are seriatly punctate, with interstices quite flat with fewer and finer sharper punctures, the punctures of the series are about as large, rather sharper and a little wider apart, with the series not at all impressed, the two outer series disappear a little below the level of the pin. The under-side is black, about as nitid, but with no metallic colour; tarsal vestiture fulvous, the distance between the eyes a little greater; ocular sulci are present below the eyes, but not well developed, and they do not extend between the eyes." While some specimens of the species I took for *cupreus*, Fab., have the under-side obscure, or black, there is still a strong presumption that either *C. cupreus* is a rare

and unique specimen, or that it is one of the later described species. It is possible that the author has misled some collectors in the confusion of *cupriventris* with *cupreus*.

#### CHALCOPTERUS PUNCTICOLLIS, Hope.

Slightly obovate, head, underside, legs, and tarsal clothing black, pronotum dark metallic-green (in old specimens black), sometimes with slight purple reflections, elytra varicoloured, chiefly cyaneous, the sutural region more or less golden or purple, sides and epipleuræ purple.

*Head* closely and strongly punctate, eyes scarcely sulcate, separated by a space equal to the length of the basal joint of antenna, antennæ with joint three nearly as long as fourth and fifth combined, sixth to tenth subequal in length but successively wider, eleventh acuminate. *Pronotum* much wider at base than at apex, sides arcuate, the lateral carina seen from above throughout, anterior angles produced, posterior obtuse, disc rather strongly, not closely punctate, with a fine lævigata central line. *Elytra* wider than prothorax at base, very little convex, widest behind middle, striate punctate, each elytron with eight striæ continuous from base to apex (besides a short scutellary stria), more deeply impressed at sides and apex, the punctures therein large, round, and close (larger and much closer than in *C. indicolor*, Bless.), intervals convex, closely and strongly punctate. *Abdomen* and sides of *metasternum* strongly punctate, the prosternum coarsely, their episterna more finely punctate; hind tarsi with basal joint nearly as long as the rest combined, claws red. *Dimensions*—11-16 × 6-8½ mm.

*Hab.*—Western Australia: Perth.

A common species, found in most collections, differing from *C. purpureus*, Germ., by its greater size, arcuate thorax, darker colour, and stronger punctuation of its upper-surface, while *suturalis*, Pasc., has a shining-black prothorax, and the intervals of elytra almost impunctate.

#### CHALCOPTERUS MAXIMUS, n. sp.

Widely ovate, head and pronotum metallic—sometimes coppery—elytra purple and green intermixed, the suture, lines of punctures, and epipleuræ greenish, sides golden-green, under-side, legs, antennæ, and tarsal clothing black.

*Head* closely, rather finely punctate, eyes without definite sulcus, space between them as wide as the basal antennal joint; antennæ very stout, rather short, scarcely enlarged apically, joint three shorter than fourth and fifth combined, sixth widest of all, shorter than the succeeding, seventh to tenth subequal, eleventh nearly as long as

and narrower than tenth. *Prothorax*  $4\frac{1}{2} \times 9$  mm., twice as wide at base as at apex, nearly straight in front, bisinuate at base, sides little narrowed on basal half, abruptly and sub-sinuately narrowed to the widely obtuse anterior angles, posterior angles (seen from above) subrectangular, lateral margins evident throughout from above, disc closely, not strongly, punctate, the median line more or less visible. *Scutellum* transverse triangular, metallic. *Elytra*  $19 \times 11\frac{1}{2}$  mm., of same width as prothorax at base, very convex; the highest point of curve (seen from the side) in front of middle, widest behind middle; seriate-punctate, the punctures in series close and small near suture (of the same size as in *C. iridicolor*, Bless.), larger towards the sides and clearly defined to the apex; intervals quite flat everywhere, closely and rather strongly punctate (stronger than in *C. iridicolor*, Bless.). Abdomen finely striolate, flanks of sternum with some larger punctures, prosternum carinate; posterior tarsi with joints one and four of equal length. *Dimensions*— $19-23 \times 10-13\frac{1}{2}$  mm.

*Hab.*—North Queensland: Endeavour River.

This is the species considered erroneously as *C. cupreus*, Fab., by Blackburn, and is the largest *Chalcopterus* known to me. The general colour and form of *C. maximus* is nearest *C. cupripennis*, Hope (= *froggatti*, Blkb.), especially in its wide, somewhat explanate prothorax, and its mingled colours, with greenish suture. The coppery pronotum is sometimes obscured by age or alcohol, and appears black. In my two fresher specimens the greenish line of punctures is in marked contrast with the more coppery intervals. Types in the author's collection.

#### CHALCOPTERUS CÆSAR, n. sp.

Convex, elongate-ovate, head and prothorax metallic-green and purple, elytra with brilliantly variegated colours arranged in vittæ in the following order: the suture golden, then stripes of purple, blue, golden-green, purple, green, lastly the extreme border narrowly golden; the prosternum also slightly metallic (in one specimen brightly so). Abdomen, legs, antennæ nitid black, tarsal vestiture black, with some fine reddish hairs on apical-joint.

*Head* deeply, closely punctate, distance between eyes greater than the basal joint of the antennæ, without clearly-defined ocular sulcus, antennæ much longer and less enlarged at apex in male than in female, third joint longer than first and second combined, and fully as long as the fourth and fifth combined, fourth shorter than fifth, eighth to tenth evidently shorter than the preceding, joint eleven longer and more acuminate in male, shorter and more obtuse in female.

*Prothorax* widest at base, base twice the width of apex (7 and 3.5 mm. respectively), apex truncate, base sublobate, sides arcuately converging from base to apex, anterior angles obtuse, posterior (seen from above) acute, (from the sides) obtuse, lateral carina not, or very little, evident from above; disc distinctly but not coarsely punctate (as in *C. superbus*, Blkb.), punctures deep and fairly close. *Scutellum* triangular, metallic and nitid, impunctate. *Elytra* seriate-punctate, each with eight rows, besides the scutellary and lateral rows, of small, deep, evenly-placed punctures, at intervals of the diameter of one of them; the intervals quite flat, closely punctate with punctures not much smaller than those in the series, both seriate and interstitial punctures larger and more clearly differentiated than those in *C. affinis*, Bless. *Abdomen* closely punctate, finely strigose on basal segments, *metasternum* sulcate behind, carinate in front, *prosternum* coarsely punctate, posterior tarsi with basal joint as long as the rest combined. *Dimensions*—Male, 20 × 10.5 mm.; female, 21 × 11.5 mm.

*Hab.*—Western Australia: Sandstone (C. J. Clayton); North-Western Australia (C. French).

Four specimens are under examination. This is perhaps the most beautiful of all the species of this genus, as well as one of the largest. It is readily separated from its allies by the combination of large size, coloured thorax, head, and *prosternum*, *elytra* splendidly variegated in vittæ, intervals flat and strongly punctate, the *elytral* punctures small in proportion to the dimensions. It is perhaps nearest to *C. rugosipennis*, Macl., in general appearance, but differs widely in the size of the punctures. The outline of the *elytra*, seen from the side, is an even, gentle curve, with the highest point near the middle. The male is more convex, with the sides more parallel, the female being slightly widened behind the middle. Types in the author's collection.

#### CHALCOPHTERUS GILESI, n. sp.

Elongate-ovate, *elytra* subcylindric and parallel, head and *prothorax* dull-black, under-side and legs nitid-black, apical-joints of antennæ pitchy-brown, tarsal vestiture red; *elytra* splendidly variegated in longitudinal vittæ in the following order: suture narrowly purple, intervals one and two blue, third and fourth green or golden, shading off to purple, then green, purple, with extreme sides and *epipleuræ* golden or green.

*Head* distinctly, closely punctate, less closely on forehead than on *episterna*, eyes separated by a space greater than the length of the antennal basal joint, without definite ocular

sulcus: antennæ slightly enlarged towards apex, joint three about equal to first and second combined and less than fourth and fifth combined, fourth to seventh equal, eighth to eleventh very little shorter than preceding, eleventh ovate-acuminate. *Prothorax* 3.5 × 5.5 mm, moderately convex, and little narrowed anteriorly, truncate at apex, sublobate at base, sides (seen from above) with posterior two-thirds nearly straight, with the lateral carina evident, seen from the sides evenly, but not widely, rounded, all angles widely obtuse, under a lens seen to be finely, not closely nor deeply, punctate. *Elytra* nearly twice as long as wide, subparallel and convex, deeply striate-punctate, the intervals strongly convex, seriate punctures large, round, deeply impressed, separated evenly by a distance of the diameter of one, becoming larger and less hidden in the striæ towards the sides, and smaller towards the base, both striæ and punctures deeply impressed to the apex. (The seriate punctures very much as in *C. plutus*, Blkb.)—intervals almost lævigata and nitid. *Abdomen* strongly strigose, *femora* and *metasternum* strongly punctate, prosternum very tumid and carinate in the middle, posterior tarsi with basal joint not as long as the rest combined. Dimensions—15.17 × 6.5-7.5 mm.

*Hab.*—North-Western Australia: Condon (H. Giles).

A very handsome species, of which several specimens, three of which are now before me, were sent by that very capable naturalist, Mr. Henry Giles, of the Zoological Gardens, Perth, and taken by him at Condon. A specimen sent to the Rev. T. Blackburn was returned with the label "unknown to me." It is very near *C. costatus*, Blkb., in shape and general appearance (of which I have seen a co-type), but differs in its more variegated and vittate arrangement of colours, and in the considerably smaller punctures of the elytral series. Also near *C. puncticollis*, Hope, so far as the convexity of intervals and the depth of striæ are concerned; but Hope's species is much less brilliantly coloured, with the interstitial punctures very strong. *C. gilesi* is not very near *C. conatus*, Blkb., though standing next to it in my tabulation.

#### CHALCOPTERUS DODDI, n. sp.

Ovate, convex; head, prothorax, under-side, legs, and basal joints of antennæ nitid-black, apical-joints of antennæ piceous; elytra green at the suture and base of punctures, otherwise nitid-coppery (with a tinge of green), epipleuræ green and purple, tarsal clothing red.

*Head* closely punctate, eyes separated by a space scarcely equal to the basal joint of antennæ, without ocular sulcus, antennæ manifestly enlarged towards apex, joint three about

equal to first and second combined, less than fourth and fifth combined, fourth to eleventh subequal in length, seventh to tenth increasingly wider. *Prothorax*  $3.5 \times 6$  mm., truncate at apex, sublobate at base, sides (seen from above) evenly, arcuately converging from base to apex, (seen from the side) more strongly transverse and rounded behind the middle, apical part of lateral carina only evident from above; disc distinctly irregularly punctate (less closely than in *C. catenulatus*, Blkb.), a lævigata central line near base only, all angles widely obtuse (seen from above the posterior angles subrectangular). *Scutellum* triangular, metallic, and nitid. *Elytra* regularly ovate, longitudinally more convex than *C. catenulatus*, Blkb., sides not at all parallel, seriate-punctate, series with large subfoveate punctures, irregular in size, shape, and spacing, becoming smaller at base and near suture, larger at apex and sides (extreme lateral row very small), the intervals flat on centre, irregularly subconvex at sides and apex, finely but distinctly punctate. *Abdomen* with apical segment punctate, other segments closely strigose, *metasternum* depressed and widely sulcate behind, finely rugose in front, prosternum carinate, posterior tarsi with basal joint less than the rest combined. *Dimensions*— $17 \times 8.5$  mm.

*Hab*—North Queensland: Kuranda (F. P. Dodd).

A single specimen received some years ago from Mr. Dodd is superficially most like *C. catenulatus*, Blkb. It differs in having its prothorax quite black (in *C. catenulatus* it is coppery), in having no ocular sulcus, in its elytra differently coloured with all the punctures smaller and more irregular (especially towards the sides and apex, where many elongate punctures prevail). The intervals near apex are transversely ridged, and the interstitial punctures are very fine. This species is more coarsely punctured in the series than any other known to me except *C. catenulatus*, Blkb. Type in the author's collection.

#### CHALCOPTERUS ANGUSTICOLLIS, n. sp.

Very elongate and narrow, widened rather strongly behind the middle, head, prothorax, under-side, legs, and basal half of antennæ nitid-black, apical-half of antennæ opaque and setose, elytra with alternate, irregular stripes of coppery-purple, blue or green, extreme sides (in one example the suture also) slightly golden, colours not definitely in vittæ, tarsi nigro-setose.

*Head* finely and closely punctate, eyes unusually widely separated, by space greater than the length of basal joint of antennæ, ocular sulcus not clearly defined. Antennæ thick,

slightly enlarged at apex, joint three as long as first and second combined, shorter than fourth and fifth combined, fourth and sixth equal, seventh to eleventh setose and shorter than preceding. *Prothorax*  $3 \times 4.5$  mm., width at apex equal to length, truncate at apex slightly sinuate at base, sides (from above) almost straightly converging from base to apex, (seen sideways) lightly arcuate, all angles obtuse, clearly, regularly punctate without any indication of central line, a very light foveate impression at apex in the middle. *Scutellum* black, triangular, and impunctate. *Elytra* elongate-obovate, moderately convex, sides widening behind the middle, seriate-punctate, with lines of different-sized punctures rather widely separated, and less strongly impressed and smaller at base and apex, larger and deeper on sides; intervals flat on centre, subconvex at sides, closely and evidently punctate. *Abdomen* closely, finely punctate, scarcely at all strigose, *metasternum* with larger punctures, close at the flanks, sparse at the centre; prosternum carinate, basal joint of hind tarsi as long as the rest combined. *Dimensions*— $15 \times 7$  mm.

*Hab.*—North Queensland.

Two specimens sent by Mr. C. French, labelled North Queensland, are peculiar in the narrow, elongate form of the prothorax, the base of which is one and a half times the width of the apex, and the elongate-obovate elytra. The seriate punctures are very irregular in size and distance apart, but in general are larger and more distant than those in *C. variabilis*, Bless.; the interstitial are slightly finer and less close than the corresponding punctures in *variabilis*. Both sexes are present. The eyes are at least as widely, or more widely, separated than in *C. howitti*, Pasc. It is near *C. perlongus*, Blkb., in dimensions and colour (of which I have a co-type, kindly given me by Mr. Blackburn), but it is easily distinguished from Blackburn's species by its coarser seriate and interstitial punctures, and the wider space between the eyes. Types in the author's collection.

#### CHALCOPHTERUS ELONGATUS, n. sp.

Elongate-ovate, cylindric; head and prothorax opaque-black, antennæ, abdomen, and legs nitid-black, sternum slightly metallic, elytra varicoloured, the suture purple, disc blue and green, then widely purple, with extreme sides and epipleuræ green or golden, the colours more or less merged, not in distinct vittæ; tarsal vestiture black.

*Head*, eyes separated by a distance equal to the length of basal joint of antennæ, ocular sulcus not defined, antennæ having joint three greater than first and second combined,

less than fourth and fifth combined, fourth to eighth subequal, remaining joints wanting. *Prothorax*  $4 \times 2.5$  mm., narrow and truncate at apex, slightly sinuous at base, sides (seen from above) almost straightly converging from base to apex, (from side-view) moderately and evenly arcuate, all angles obtuse (seen from above, posterior angles appear rectangular); distinctly, evenly, punctate, with evident lævigata central line. *Scutellum* black, triangular, impunctate. *Elytra* elongate and cylindric, slightly enlarged behind the middle; seriate-punctate, with punctures of even size and distance apart; intervals quite flat and strongly punctate (both seriate and interstitial punctures very much as in *C. variabilis*, Bless., but the former more even in size and more close, the latter a little finer). *Abdomen* finely and regularly punctate, the flanks more strongly so, *metasternum* sparsely punctate at the sides only, prosternum with a small carina, posterior tarsi with basal joint shorter than the rest combined. *Dimensions*— $13-14 \times 6.5$  mm.

*Hab.*—Queensland.

Three specimens (with mutilated antennæ) were given me by Mr. A. M. Lea. The species evidently differs from *C. cylindricus*, Blkb., by its black tarsal clothing and the finer seriate punctures of the elytra (which in *cylindricus* resemble the intermediate rows of *C. punctipennis*, MacI.). The colours are not exceptionally brilliant, as is the case in *C. cylindricus*, which, moreover, is slightly narrower than the above, with the prothorax a different shape. It differs from *C. perlongus*, Blkb., in its duller black, shorter, and more rounded prothorax, shorter and more convex (longitudinally) elytra, with the interstitial punctures stronger. Types in the author's collection.

#### CHALCOPHTERUS PRISMATICUS, n. sp.

Elongate-ovate, parallel, head, pronotum, and under-side very nitid-black, elytra splendidly versicolorous in vittæ, i.e., suture purple, then one interstice blue, next two interstices gold or greenish, then purple, gold, or green, with shoulders, sides, and epipleuræ blue.

*Head* densely punctate, without lævigata intervals, the punctures round, deep, and neither rugose nor confluent; eyes widely separated (more widely than in *C. affinis*, Bless.), without ocular sulcus; antennæ long, joint three longer than first and second combined, and nearly, or quite, as long as fourth and fifth combined, fourth to eleventh of nearly equal length, evidently widened towards apex. *Prothorax*  $3 \times 5$  mm., very convex, apex truncate, base slightly lobate in the middle, sides rather widely and evenly rounded and arcuately converging



to apex, all angles really obtuse, though seen from above the posterior angles apparently rectangular; distinctly punctate, the punctures smaller and less dense than on head, without defined lævigata portion or any vestige of middle line. *Elytra* moderately convex (less so than in *C. cylindricus*, Blkb.), its outline (seen from the side) rather straight, slightly wider than and four times as long as the prothorax; strongly striate-punctate, the intervals costiform, punctures in striæ large, close, and regular, slightly increasing in size from the suture outwards, the intervals between the punctures less than the diameter of one, their size larger than in *C. punctipennis*, MacI., intervals minutely but distinctly punctate. *Abdomen* finely rugose and punctate, sternum punctate only, prosternum carinate, *legs* very nitid and finely punctate, tarsi thickly rufo-setose, hind tarsi with basal joint nearly as long as the rest combined. *Dimensions*— $14 \times 7$  mm.

*Hab.*—North-West Queensland: Camooweal.

Two specimens, both apparently female, sent to Dr. E. W. Ferguson, and generously presented to the author, add an exceptionally beautiful species to the genus. It is easily distinguished by its combination of deeply-striated elytra, brilliant colours, nitid surface, wide eye interval, and rufo-setose tarsi. Wider and less convex than *C. cylindricus*, its colour separates it at once from *C. costatus*, Blkb., near which it stands in my table. Type in the author's collection.

#### CHALCOPHTERUS IRIDESCENS, n. sp.

Elongate, subparallel, convex; mouth purple and blue, front and vertex coppery-purple, pronotum bright burnished-copper, elytra variegated, the suture bright-gold, then a narrow strip of bright-purple (these colours forming an elongate patch, not in vittæ nor continuous to apex), shoulders bronze, the rest of elytra a brilliant iridescent-blue, changing to green or gold, according to the light reflected; under-side brilliantly nitid and variegated, the central portions blue or green with purple reflections, epimera and prosternum purple. Legs deep purple-blue. Tarsi with yellow clothing.

*Head* closely and evidently punctate, eyes distant, slightly less than the length of the basal joint of antenna, antennæ widening to apex, joint three shorter than fourth and fifth combined, sixth to tenth gradually longer and wider, eleventh longest cylindrical. *Pronotum* truncate in front, sinuate behind, base less than twice as wide as apex, sides arcuately converging to apex, all angles obtuse and rounded, disc impunctate and mirror-like. *Scutellum* triangular and depressed. *Elytra* wider than prothorax, convex transversely and more than usually so longitudinally,

with apex somewhat acuminate; seriate-punctate (punctures sometimes connected by very fine striæ), the punctures in striæ small, evenly and distantly placed (smaller than in *C. iridicolor*, Bless., or *C. variabilis*, Bless.), the series evanescent towards apex, intervals flat and sparsely dotted with very minute punctures (only visible under a lens). *Abdomen* minutely punctate, *metasternum* obliquely striolate. *Dimensions*— $14 \times 7$  mm.

*Hab.*—South Australia: Nullarbor Plains (Eucla district).

A single specimen, kindly given me by Mr. C. French, is the most brilliantly-coloured *Chalcopterus* known to me. The colours are so elusive that it is difficult to describe them accurately. The under-side is as brilliant as the upper-surface. In size, form, and colour it is nearest *C. meyricki*, Blkb. (of which I have seen a co-type in the South Australian Museum), but it differs in the following particulars from *C. meyricki*: (1) Colours more brilliant and varied; (2) eyes less widely separated; (3) seriate-punctures much smaller, more distant, intervals distinctly though minutely punctate; (4) tarsi with yellow clothing. Type in the author's collection.

#### CHALCOPTERUS LATIFRONS, n. sp.

Elongate-ovate, subparallel, depressed; head, pronotum, under-side, and legs black, moderately nitid, elytra variegated, suture and sides green, the greater part of disc purple, or green suffused with purple. Tarsal clothing black.

*Head* densely punctate, space between eyes wider than the length of the basal joint of antenna (wider than in *C. howittii*, Pasc.), antennæ stout and gradually thickened outwards, third about as long as fourth and fifth combined, four apical-joints subequal and shorter than the preceding joints. *Prothorax* twice as wide as long, slightly sinuate at apex and base, sides evenly but arcuately converging to apex, disc closely punctate and very finely rugose, smooth medial line evident for the greater part, anterior angles a little produced, widely obtuse, posterior angles (seen from above) acute. *Elytra* of the same width as prothorax at base, sides parallel for the greater part, depressed; seriate-punctate; the punctures in series moderately large and closely set (as large as in *C. variabilis*, Bless., but much closer), intervals very coarsely and densely punctate, and slightly rugose. *Abdomen* nitid, closely striolate and punctate, *metasternum* coarsely punctate and obliquely-strigose. *Dimensions*— $16 \times 8$  mm.

*Hab.*—Western Australia: Shark Bay and Murchison River.

Four specimens, from Mr. C. French, are not very near any of those described that combine black pronotum, obscure

elytral colours with black tarsal clothing. In form near *C. leai*, Blkb., and *C. obscurus*, Blkb. The punctures of the intervals are coarser and deeper than those in *C. variabilis*, Bless., and are unusually strong. The eyes are exceptionally widely separated, while the outline, seen sideways, shows less convexity than in any other species known to me. Type in the author's collection.

CHALCOPTERUS CYANEUS, n. sp.

Shortly oval, moderately convex, head, legs, and under-side black, pronotum dark-blue, very nitid, elytra nitid-blue, shoulders and sides with metallic reflections, antennæ piceous, tarsal clothing yellow.

*Head* finely punctate, eyes widely separated (as in *C. howittii*, Pasc.), antennæ with basal joints slender, apical-joints much thickened, third as long as fourth and fifth combined, sixth to eleventh successively longer, eighth to eleventh much thicker than preceding. *Prothorax* apex truncate, base slightly sinuate, sides well rounded and converging to apex, all angles obtuse and rounded, twice as wide at base as at apex, closely and finely punctate, with faint indication of a smooth medial line in front. *Elytra* wider than prothorax at base, oval, convex, humeri rather prominent; seriate-punctate, intervals quite flat; the seriate punctures deep, round, and rather close (four to the space of an interval), intervals finely but distinctly punctate; under-side very finely striolate. *Dimensions*— $11 \times 5\frac{1}{2}$  mm.

*Hab.*—North-Western Australia.

A single specimen in my collection from a forgotten source. Amongst the species which combine blue pronotum and elytra, with yellow clothing to the tarsi, it is nearest to *C. pulcher*, Blkb., and *C. hartmeyeri*, Geb. From both it differs in its much more nitid colour and stronger punctuation of pronotum and elytra, besides being smaller. The form is like *C. palmerstoni*, Blkb., or *C. amethystinus*, Fab.; the punctures of elytra are arranged somewhat as in *C. purpureus*, Germ. Type in the author's collection.

CHALCOPTERUS SERICATUS, n. sp.

Ovate convex, head, pronotum, under-side, and legs black, elytra rose-purple, with sides and epipleuræ green or blue, tarsal clothing red.

*Head* scarcely, or very finely, punctate, eyes with small sulcus on inner margin, and separated by a distance equal to the length of first joint of antennæ, antennæ with joint three nearly as long as fourth and fifth combined, sixth to eleventh subequal in length, but successively slightly widening. *Prothorax* considerably (not twice) wider at base than

apex, the former bisinuate, the latter arcuate, sides widely rounded (seen from the sides), all angles obtuse, disc finely punctate, with a smooth medial line and a fovea on each side near the middle of disc. *Scutellum* black, minutely punctate. *Elytra* very convex (as in *C. affinis*, Bless.), finely striate-punctate, the seriate punctures close together, distinctly larger than in *C. affinis*, and lying in shallow striæ, clearly defined throughout except near base, intervals everywhere quite flat and impunctate, and very finely transversely rugose, giving a silky opaque appearance. *Abdomen* finely striolate. *Dimensions*—12-13 × 6-6½ mm.

*Hab.*—North Queensland: Coen district (H. Hacker); Endeavour River (G. Masters).

Two specimens examined—one given me by Mr. Hacker some years ago, the other was amongst some duplicates of the late Mr. Masters—are evidently undescribed. Amongst the species which combine black pronotum, with red- or yellow-clad tarsi only *munulus*, Blkb., *acutangulus*, Blkb., and *minor*, Blkb., could possibly be confused with it; but the first two of these have their elytral intervals more or less punctate, while in *minor* they are almost smooth, while none of them are striate. I know of no other *Chalcopterus* having this finely rugose but impunctate surface (easily seen under a lens). The colour is an almost uniform purple, except at the sides. Type in the author's collection.

#### Table of CHALCOPTERUS.

Species marked thus \* are unknown to the author, or determined only by description.

The number in the second column indicates how far the specified character is inclusive in the first column; thus 3|9|“*Elytra striate*” applies to all species from 3-9, inclusive, in the first column.

1	91	Pronotum black.	
2	44	Tarsi nigro-setose.	
3	9	Elytra striate.	
4		Size large, 19-21 mm. long	... <i>superbus</i> , Blkb.
5	9	Size smaller, 10-15½ mm. long.	
6		Elytral colours in distinct longitudinal vittæ	... interioris, Blkb.
			*blackburni, Geb.
7	9	Elytral colours not in distinct longitudinal vittæ.	
8		Size small, 10-11 mm. long; form depressed	... sulcipennis, Hope
			... suturalis, Pasc.
9		Size larger, 15 mm. long; form very convex	... mastersi, Blkb.
10	44	Elytra seriate-punctate.	
11	13	Size large, 19-20 mm. long.	
12		Colours in distinct longitudinal vittæ	... imperialis, Blkb.
13		Colours not	... *kochi, Blkb.

- 14| 41 Size smaller, not more than 16 mm. long.
- 15| 23 Length more than twice breadth.
- 16| Ocular sulcus distinct and foveate *interrogationis*, Geb.
- 17| 23 Without distinct ocular sulcus.
- 18| Eyes very approximate ... *prospiciens*, Blkb.
- 19| 23 Eyes not very approximate.
- 20| Sternum metallic ... *elongatus*, n. sp.
- 21| 23 Sternum black.
- 22| Form cylindric, seriate punctures as in *C. affinis*. Bless. ... *perlongus*, Blkb.
- 23| Form obovate, seriate punctures much larger ... *angusticollis*, n. sp.
- 24| 29 Length almost exactly twice breadth.
- 25| Size large, 16 mm. long; eyes widely separated ... *latifrons*, n. sp.
- 26| 29 Size smaller, not more than 12 mm. long.
- 27| Elytral intervals distinctly punctate, seriate punctures continuous to apex ... *difficilis*, Blkb.
- 28| Elytral intervals more finely punctate, seriate punctures obsolete at apex ... *\*puer*, Blkb.
- 29| Elytral intervals almost lævigatæ, prothorax almost straight ... *\*palmerstoni*, Blkb.
- 30| 44 Length less than twice breadth.
- 31| Ocular sulcus distinct ... *segnis*, Blkb.
- 32| 44 Ocular sulcus wanting.
- 33| 41 Size medium, 10-14 mm. long.
- 34| 40 Elytra more or less concolorous.
- 35| 37 Colour violet-bronze.
- 36| Interstitial punctures nearly as large as seriate ... *affinis*, Bless.  
var. *horvitti*, Pasc.  
*simius*, Blkb.
- 37| Interstitial punctures very fine *\*sparsus*, Blkb.
- 38| Colour green ... *clypealis*, Blkb.
- 39| Colour deep silky-purple, shoulders and sides green ... *exoletus*, Blkb.
- 40| Colour uniform olive bronze-black ... *cribratus*, Blkb.
- 41| Colour variegated (sides of prothorax straight) ... *intermedius*, Blkb.  
*arthuri*, Blkb.
- 42| 44 Size small, 7 mm. long.
- 43| Eyes close, seriate punctures of even size and close ... *proximus*, Blkb.
- 44| Eyes normally widely placed, seriate punctures varying in size and distant ... *modestus*, Blkb.
- 45| 91 Tarsi flavo- or rufo-setose.
- 46| 58 Elytra striate.
- 47| 51 Striæ deep, intervals costiform.
- 48| Colours in distinct longitudinal vittæ ... *prismaticus*, n. sp.
- 49| 51 Colours not.

50	Elytra parallel, seriate punctures large ... ..	<i>costatus</i> , Blkb.
51	Elytra obovate, seriate punctures smaller ... ..	<i>longiusculus</i> , Blkb.
52	58 Striæ less deep, intervals more or less convex.	
53	57 Colours in distinct longitudinal vittæ.	
54	Eyes bordered by a carina and sulcus ... ..	<i>carinaticeps</i> , Blkb.
55	57 Eyes not so bordered ... ..	
56	Length greater than twice breadth, interstices sublævigata ... ..	<i>gilesi</i> , n. sp.
57	Length less than twice breadth, interstices strongly punctate..	<i>zonatus</i> , Blkb.
58	Colours not in distinct longitudinal vittæ ... ..	<i>mercurius</i> , Blkb.
		var. <i>cræsus</i> , Blkb.
59	91 Elytra seriate-punctate.	
60	66 Ocular sulcus distinct.	
61	Pronotum lævigata .. ..	<i>lævicollis</i> , Bless.
		<i>cyanipennis</i> , Hope
		<i>cælestis</i> , Pasc.
62	66 Pronotum punctate.	
63	65 Interstices of elytra more or less punctate.	
64	Length 12-14 mm., seriate punctures finer than in <i>C. affinis</i> . Bless. ... ..	<i>acutangulus</i> , Blkb.
65	Length 10 mm., seriate punctures larger than in <i>C. affinis</i> , Bless.	<i>mundus</i> , Blkb.
66	Interstices of elytra impunctate and minutely rugose ... ..	<i>sericatus</i> , n. sp.
67	91 Ocular sulcus wanting.	
68	72 Length greater than twice breadth.	
69	71 Size medium, 14 mm. long; intervals flat.	
70	Eyes normally distant, colours in vittæ ... ..	<i>cylindricus</i> , Blkb.
71	Eyes almost contiguous, colours obscure ... ..	<i>boops</i> , Blkb.
72	Size small, 11 mm. long; colour black ... ..	* <i>bovilli</i> , Blkb.
73	84 Length almost exactly twice breadth.	
74	78 Prothorax with basal half subparallel.	
75	77 Elytral intervals distinctly punctate.	
76	Size large, 19-21 mm. long; seriate punctures large ... ..	<i>colossus</i> , Blkb.
		<i>laticollis</i> , Blkb.
77	Size smaller, 16 mm. long; seriate punctures as in <i>C. variabilis</i> , Bless. ... ..	<i>longulus</i> , Blkb.
78	Elytral intervals apparently impunctate ... ..	* <i>tenuicornis</i> , Geb.

79	84	Prothorax with sides arcuate from base to apex.	
80	83	Seriate punctures distinct from interstitial.	
81	16	mm. long, interstitial punctures finer and more distant than in <i>longulus</i> , Blkb. ...	<i>longipennis</i> , Hope <i>similis</i> , Blkb.
82	17	mm. long, seriate punctures very large ...	<i>doddi</i> , n. sp.
83	18-21	mm. long, seriate punctures very small ...	<i>gracilicornis</i> , Blkb.
84		Seriate punctures scarcely distinct from interstitial ...	<i>iris</i> , Blkb.
85	91	Length less than twice breadth.	
86		Size large, 20 mm. long ...	<i>pulmerensis</i> , Blkb.
87	90	Size medium, 14-16 mm. long.	
88	90	Elytral intervals punctate.	
89		Distance between eyes equal to basal antennal joint ...	<i>obscurus</i> , Blkb.
90	(1)	Distance between eyes less than basal antennal joint ...	<i>neglectus</i> , Blkb.
91		Elytral intervals quite, or almost, lævigata, 10-12 mm. long ...	<i>minor</i> , Blkb.
92	209	Pronotum metallic or coloured.	
93	170	Tarsi nigro-setose.	
94	100	Elytra striate.	
95	97	Ocular sulcus defined.	
96		Elytral colours in vittæ, intervals rugose, distinctly punctured ...	<i>punctipennis</i> , Macl.
97		Elytral colours not in vittæ, intervals nitid, little punctured	<i>plutus</i> , Blkb.
98	100	Ocular sulcus not defined.	
99		Intervals strongly convex, sides of prothorax arcuate ...	<i>puncticollis</i> , Hope
100		Intervals lightly convex, sides of prothorax nearly straight ...	<i>purpureus</i> , Germ.
101	170	Elytra seriate-punctate.	
102	106	Intervals sub-convex.	
103	105	Underside black, ocular sulcus defined.	
104		Elytral colours in vittæ ...	<i>iridicolor</i> , Bless.
105		Elytral colours not in vittæ ...	<i>murayensis</i> , Blkb.
106		Underside iridescent, ocular sulcus not defined ...	<i>cyaniventris</i> , n. sp. ( <i>longipennis</i> , Blkb.)
107	170	Intervals flat.	
108	113	Length greater than twice breadth.	
109		Size large, 18 mm. long ...	<i>brevipes</i> , Blkb.
110	112	Sides of prothorax arcuate.	
111		Ocular sulcus subfoveiform, form very narrow ...	* <i>macer</i> , Blkb.
112		Ocular sulcus defined, form much wider ...	<i>lepidus</i> , Blkb.
113		Sides of prothorax nearly straight, ocular sulcus wanting	<i>cyrensis</i> , Blkb.

(1) *Neglectus*, Blkb., is one of the rare exceptions in which the pronotum may be black or slightly metallic.

- 114|132 Length almost exactly twice the breadth.
- 115 Elytral colours in vittæ ... .. *oblongus*, Blkb.
- 116|132 Elytral colours not in vittæ ..
- 117 Underside blue ... .. *iridiventris*, Blkb.  
var. (?) *meyricki*, Blkb.
- 118|132 Underside black.
- 119|123 Ocular sulcus defined.
- 120 Size larger, 15 mm. long ... .. *punctulatus*, Blkb.
- 121|123 Size smaller, 10-11 mm. long.
- 122 Prothorax coarsely punctate .. *yorkensis*, Blkb.
- 123 Prothorax finely punctate... .. *eremita*, Blkb.
- 124|132 Ocular sulcus not defined.
- 125|129 Interstitial punctures distinct, elytra variegated.
- 126 Seriate and interstitial punctures scarcely differentiated ... .. *micans*, Blkb.
- 127|132 Seriate and interstitial punctures distinctly differentiated.
- 128 Anterior angles of prothorax prominent, lateral carina nearly straight ... .. *vividus*, Blkb.
- 129 Anterior angles of prothorax not prominent, lateral carina arched downwards ... .. *variabilis*, Bless.
- 130|132 Interstitial punctures very fine, elytra blue.
- 131 Head black, 12 mm. long ... .. *bellus*, Blkb.
- 132 Head blue, 9 mm. long ... .. *carus*, Blkb.
- 133|170 Length less than twice breadth.
- 134|138 Size very large, 17-21 mm. long.
- 135|137 Elytral colours in vittæ.
- 136 Elytral punctures small, colours extending to head and sternum *cæsar*, n. sp.
- 137 Elytral punctures large, head and sternum black .. .. *rugosipennis*, Macl.
- 138 Elytral colours not in vittæ, head metallic ... .. *maximus*, n. sp.  
(*cupreus*, Blkb.)
- 139|170 Size smaller, 10-16 mm. long.
- 140|146 Under-side iridescent or metallic.
- 141|143 Ocular sulcus defined.
- 142 Space between eyes very wide, pronotum and elytra widely discolorous ... .. *viridicollis*, W. S. Macl.  
\**bicolor*, Geb.
- 143 Space between eyes very narrow, pronotum and elytra concolorous ... .. *smaragdulus*, Fab.  
*semiticus*, Pasc.  
*vigilans*, Blkb.
- 144|170 Ocular sulcus not defined.
- 145 Space between eyes much less than basal joint of antenna ... *cairnsi*, Blkb.
- 146 Space between eyes much wider, colours more brilliant ... .. *ferrens*, Germ.
- 147|170 Under-side black.
- 148|150 Femora red or red-brown.
- 149 Prothorax strongly narrowed anteriorly ... .. \**michaelseni*, Geb.



150	Prothorax with sides subparallel	<i>*parallellocollis</i> , Geb.
151 170	Femora black.	
152 158	Size larger, 14-16 mm. long.	
153	Pronotum coarsely rugose punctate ... ..	<i>rugosicollis</i> , MacI.
154 170	Pronotum finely punctate.	
155 157	Seriate and interstitial punctures not strongly differentiated.	
156	Metasternum and femora strongly punctate ... ..	<i>placidus</i> , Blkb.
157	Metasternum and femora not strongly punctate ... ..	<i>cupripennis</i> , Hope <i>froggatti</i> , Blkb.
	var. (?) (2)	<i>semi-seriatus</i> , Blkb.
158	Seriate and interstitial punctures distinctly differentiated	<i>inconspicuus</i> , Blkb.
159 170	Size smaller, 10-13 mm. long.	
160 167	Elytral intervals distinctly punctate.	
161	Seriate and interstitial punctures scarcely (or not) differentiated	<i>fastuosus</i> , Germ. <i>obsoletus</i> , MacI. <i>confluens</i> , Blkb.
162 170	Seriate and interstitial punctures distinctly differentiated.	
163	Head black, eyes very widely separated ... ..	<i>polychromus</i> , Pasc.
164	Head black, eyes not very widely separated ... ..	<i>tinctus</i> , Blkb.
165 169	Head metallic.	
166	Pronotum somewhat opaque, seriate punctures large ... ..	<i>vinosus</i> , Pasc. (?) <i>resplendens</i> , Boisd.
167	Pronotum very nitid, seriate punctures much smaller ... ..	<i>versicolor</i> , Blkb.
168 170	Elytral intervals sublævigatæ.	
169	Upper-surface very nitid ... ..	<i>lætus</i> , Blkb.
170	Head black, upper-surface less nitid ... ..	<i>*juvenis</i> , Blkb.
171 209	Tarsi flavo-setose (or rufo-setose).	
172	Elytra striate, head and under-side generally metallic ... ..	<i>cupriventris</i> , n. sp.
173 209	Elytra seriate-punctate.	
174 176	Length greater than twice breadth.	
175	Eyes very close, under-side black	<i>*ocularis</i> , Blkb.
176	Eyes not very close, under-side blue ... ..	<i>gracilior</i> , Blkb.
177 192	Length almost exactly twice breadth.	
178 180	Size large, 16-18 mm. long.	
179	Elytral colours in distinct vittæ	<i>catenulatus</i> , Blkb.
180	Elytral colours not in distinct vittæ (eye carinate on inner-margin) ... ..	<i>leai</i> , Blkb.
181 192	Size smaller, 12-14 mm. long.	

(2) Though distinguished by the author by its "ocular sulcus"—and I possess a specimen named by him—in a long series I have been unable to separate *semi-seriatus* from *froggatti*.

182	Head and under-side brilliantly iridescent ... ..	<i>iridescens</i> , n. sp.
183 192	Head and under-side black.	
184	Elytra vari-coloured, intervals distinctly punctate ... ..	<i>mimus</i> , Blkb.
185 192	Elytra concolorous (blue or green), intervals not distinctly punctate.	
186	(3) Femora red .. ..	<i>umethystinus</i> , Fab.
187 192	Femora black.	
188 191	Pronotum opaque, very finely punctate.	
189	Elytral intervals sublævigatæ, seriate punctures small and distant ... ..	<i>*hartmeyeri</i> , Geb.
190	Elytral intervals sublævigatæ, seriate punctures elongate and scratch-like ... ..	<i>opacicollis</i> , Macl. <i>hunterensis</i> , Blkb.
191	Elytral intervals finely but more distinctly punctate, seriate punctures larger and closer ...	<i>pulcher</i> , Blkb.
192	Pronotum very nitid, more strongly punctate ... ..	<i>cyaneus</i> , n. sp.
193 209	Length less than twice breadth.	
194 198	Size large, 18-19 mm. long.	
195	Eyes very close, elytral colours in vittæ ... ..	<i>grandis</i> , Macl.
196 198	Eyes much more distant, elytra nearly concolorous.	
197	Intervals strongly convex ... ..	<i>proditor</i> , Blkb.
198	Intervals feebly convex, seriate punctures smaller ... ..	<i>major</i> , Blkb.
199 209	Size smaller, 13-16 mm. long.	
200 202	Legs red or piceous.	
201	Colour blue or blue-green, seriate punctures very small ... ..	<i>nigritarsis</i> , Pasc. <i>rufipes</i> , Macl.
202	Colour green, seriate punctures larger ... ..	<i>picipes</i> , Macl. <i>jucundus</i> , Blkb.
203 209	Legs black.	
204 206	Elytra and epipleuræ scantily setose.	
205	Colour metallic-green, pronotum distinctly punctate, elytral punctures blue or purple ...	<i>setosus</i> , Blkb.
206	Colours obscure, pronotum scarcely evidently punctate, elytral punctures larger ... ..	<i>nobilis</i> , Blkb.
207 209	Elytra and epipleuræ not setose.	
208	Elytra purple, pronotum green (or blue), seriate punctures uniform to apex ... ..	<i>rusticus</i> , Blkb.
209	Elytra bronze, pronotum dark-bronze, seriate punctures obsolete near apex ... ..	<i>velutinus</i> , W. S. Macl.

(3) This species has both black and red hairs on the tarsi; the posterior tarsi are rather "nigro-setose," while the anterior and intermediate tarsi are rufo-setose.

## AMARYGMUS.

*Synonymy:—*

1. *A. obtusus*, Pasc. = *A. tristis*, Fab, var
2. *A. ellipsoides*, Pasc. = *A. anthracinus*, Hope
3. *A. indigaceus*, Pasc. = *A. picicornis*, Hope.
4. *A. tasmanicus*, Blkb. = *A. alienus*, Blkb (*curvipes*, Geb.), var. = *A. uniformis*, Blkb. = *A. foveo-striatus*, Fairm. = *A. foveosensatus*, Fairm = *A. morio*, Fab.
5. *A. tardus*, Blkb = (?) *A. torridus*, Pasc. = *A. bicolor*, Fab.
6. *A. rutilipes*, Blkb. = *A. minutus*, Pasc
7. *A. maurulus*, Pasc. = (?) *A. pusillus*, Pasc

The last-named in each case has the priority

*A. tristis*, Fab This name has been generally accepted in our museums for the very common black species found over the whole coastal region of New South Wales and Queensland. In the northern part of New South Wales and in South Queensland I have taken a purple variety, while further north there is a second variety with greenish elytra and rather larger elytral punctures, but otherwise identical with the Sydney insect. A specimen of *obtusus*, Pasc., sent by Mr. Blair agrees with the purple variety. I can only regret that he did not send an authentic specimen of *tristis*, Fab, but I find no mention of this type amongst his notes.

*A. anthracinus*, Hope, from Port Essington. The locality is not given in the description, which omission led Blackburn into the assumption that it was an Adelaide insect, hence a black variety of *purpureus*, Germ. Mr. Blair writes that *A. ellipsoides*, Pasc. = *A. anthracinus*, Hope. There is, however, just a shade of doubt as to whether *A. semissis*, Pasc, is not intended, since evidently *semissis* and *ellipsoides* are extremely close, and while specimens of both these species have been sent me, certainly in one case the name *ellipsoides* has been attached to a specimen—the common Sydney species—which I take to be *semissis*, Pasc. Both these species were described by Pascoe in the same paper and on the same page, and, while evidently allied, the following distinctions are made by the author.

*A. semissis*

- (1) Elytra black.
- (2) Eyes moderately appropriate.
- (3) Form broader and less convex.
- (4) Habitat: Kiama (N.S.W.)

*A. ellipsoides.*

- Greenish-black.  
 Eyes not approximate.  
*More elliptic*  
 Queensland.

Of these the only definite character, since the colour distinction is slight, is (2), and I find this clearly demonstrated in specimens sent.

*Cnodulon picicorne*, Hope = *A. indigaceus*, Pasc. Mr. Blair writes: "Hope's type is rather smashed up, and appears to be a little longer than Pascoe's, but I think there can be no doubt as to the identity of the two. Pascoe's bears locality Sydney, while Hope's has none—only three of his types bear locality indications in Hope's writing on the name label."

*A. uniformis*, Blkb., Mr. Blair writes, "is either very near or conspecific with *A. foreoseriatus*, Fairm., from Duke of York Island, though the latter is a dark greenish-black colour." This is the colour given by Blackburn for *uniformis* in his note under the description; moreover, the fauna of Duke of York Island is typically a Queensland fauna, from many experiences in other species.

*A. tasmanicus*, Blkb., was stated by Blackburn to be a variety of *uniformis*. Gebien places it in the new catalogue as a distinct species. The locality (Tasmania) requires confirmation, as, so far, only a single mutilated specimen (the type) is known, and is probably explained by the well-known possibility of error in labels, as is shown in the case of *C. setosus*, Blkb.

*A. alienus*, Blkb. (*curvipes*, nov. nom., Geb.), Mr. Blair writes, "is, I think, identical with specimens labelled as *costatus*, H. Deyr (? M.S.), from New Guinea. How they got down to Victoria is beyond me. [Probably another erratic label.—H. J. C.] This specimen differs [from *uniformis*] in its blackish-green instead of bronzy-green colour, and in the punctures of the median series being much larger and further apart than the rest. The latter character is present in *uniformis*, but to a less degree, and these two may be conspecific." It is very probable that *alienus* is thus only a variety of *foreoseriatus*, Fairm.; at any rate, *alienus* is *nom. praec.* by Pascoe for a Ceylon species.

*A. bicolor*, Fab. Mr. Blair writes: "Very near *torridus*, Pasc. The elytra are scarcely so nitid as in specimen sent; the punctures, especially on the declivity, are fewer but more elongate, with a tendency to run together in pairs. Instead of being concolorous with the elytra, they have a tarnished appearance as in *tardus*, Blkb. The legs and under-side are of a darker red, as they are in some specimens of our series. *Tardus*, Blkb., is, in my opinion, probably identical with *bicolor*, Fab. The type is a little larger, under-side and legs still darker, and the number of punctures on the inner series is distinctly larger than in the others; the tendency to form

dashes is also present, and the peculiar colouration of the punctures is the same; the general colour of the elytra is brownish, like that of the thorax of *torridus*, Pasc. Our series of *torridus* contains eight examples—Cape York (1), Torres Strait (1), Murray Island (3), Port Moresby (1), Rockhampton (1), Northern Australia (1)—which hardly differ except in the depth of the red of legs and under-side (almost black in some), while the types of *bicolor* and *tardus* differ from them in the colour of the large punctures on the elytra and their tendency to form dashes; the differences between these, as indicated, are very slight and doubtfully specific." From the above, and from the specimen sent, I should say that *tardus*, Blkb. = *bicolor*, Fab., and that *torridus*, Pasc., is a variety of the same species, having reddish legs and under-side, with the foveæ concolorous with the elytra. The name of Pascoe's species should be retained for this distinct variety.

*A. minutus*, Pasc. Mr. Waterhouse very kindly compared the types, and writes: "*=rutilipes*, Blkb., which is like yours. Type of *minutus* is a little smaller, and I fancy the punctuation is a trifle finer, but they seem to be the same species."

*A. maurulus*, Pasc. A specimen sent agrees exactly with specimens I had determined from the Illawarra, New South Wales, as *pusillus*, Pasc., and there is little to distinguish these species in their respective descriptions, both from the same locality, except a slight difference in colour and size, *maurulus* having the elytra "dark blue-black" and length 3 to 3½ lines, while in *pusillus* Pascoe says "elytra nearly opaque, brownish-black," length 2¾ lines.

*A. frenchi*, Blkb., Mr. Blair writes, "seems to be another such erratic (as *uniformis* and *alienus*). It is somewhat variable, but we have many specimens from New Guinea, Gilolo, Ternate, Obi Islands. There are also other allied forms in this region, and these all seem to be more at home there than amongst the Victorian fauna." Certainly amongst the many hundreds of specimens examined and captured from every Australian State I have never met with it, so that again its locality requires confirmation.

#### SUPPLEMENTARY NOTES ON AMARYGMINÆ.

*Amarygmus (Erotylus) morio*, Fab. In a later communication Mr. K. G. Blair writes: "I have discovered another type of Fabricius; the specimen was apart from the others in the Banks Collection, and had been quite overlooked by me. *E. morio* is identical with the specimen sent from Murray Island, and specimens from New Guinea have also been

received. If you refer to Fabricius' description of *morio*, it does not appear to agree with the specimen:—'Antennæ filiformes, atræ. Thorax nitidus, ater, lævis, elytra atra punctata striata.' As a matter of fact the type was a dull-black, with hardly a glimmer of metallic lustre, but it seemed to me so like in structure to the insect sent that I thought I would try the effect of a little soap and water. The effect was marvellous, and the thorax and elytra, when washed, show as bright a colour as a modern specimen. The antennæ (two joints on one side, three on the other) I dare not wash, but they show distinct signs of red, and I have no doubt would be as red as they should be if cleaned. This shows that the creature must have been in its present dirty condition when it came into Fabricius' hands, and that it is not a change due to the accumulation of years." Mr. Blair's specimen sent, as compared with this, is, in my opinion, one of the many varieties of the species named *uniformis*, Blkb. From the typical North Queensland form it differs only in (1) the more green-bronze colour of upper-surface, (2) the slightly larger seriate-punctures of elytra, with more irregularity in its striation. This would make *uniformis*, Blkb., and its synonyms in my table give place to *A. morio*, Fab., as the earliest name. The name has been unaccountably omitted from the catalogues, e.g., Gemminger and Harold, Masters, Junk.

Table of *AMARYGMUS* (Australian species).

Species marked \* not personally examined by the author.

Numbers in the columns as in *Chalcopterus* table, *supra*.

1	58	Pronotum black.	
2	28	Elytra black (or so dark as to be indistinguishable from black).	
3	25	Elytra striate.	
4	16	Upper-surface more or less nitid.	
5		Size large, 12 mm. long ... ..	<i>tristis</i> , Fab.
			Purplish, var. <i>obtusius</i> , Pasc.
6	16	Size smaller, 4.9 mm. long.	
7		Length greater than twice breadth	<i>minutus</i> , Pasc.
			<i>rutilipes</i> , Blkb.
8	16	Length less than twice breadth.	
9	13	Elytral intervals strongly convex.	
10		Form wide and convex, surface very nitid ... ..	<i>carbo</i> , n. sp.
11	16	Form less wide.	
12		Sides of pronotum widely arcuate	<i>perplexus</i> , Blkb.
13		Sides of pronotum nearly straight (narrowed in front) ... ..	<i>pinguis</i> , Blkb.
14	16	Intervals very lightly convex.	
15		Eyes approximate ... ..	<i>semissis</i> , Pasc.

- 16 Eyes not approximate . . . . . *anthracinus*, Hope  
*ellipsoides*, Pasc.
- 17 25 Upper-surface opaque
- 18 Form very wide and convex, hind  
 tibiae curved . . . . . *sphaeroides*, n. sp.
- 19 25 Form less wide and convex, hind  
 tibiae straight.
- 20 22 Pronotum nearly smooth.
- 21 Size larger, seriate punctures  
 smaller, antennæ dark-piceous . . . . . *striatus*, Macl.
- 22 Size smaller, seriate punctures  
 larger, antennæ paler . . . . . *pusillus*, Pasc.  
*maurulus*, Pasc.
- 23 25 Pronotum rugose.
- 24 Length equal to twice breadth,  
 anterior angles produced and  
 acute . . . . . *rugaticollis*, Blkb.
- 25 Length less than twice breadth,  
 anterior angles not produced,  
 rectangular . . . . . *aborigine*, n. sp.
- 26 28 Elytra seriate-punctate.
- 27 Seriate punctures large, eyes widely  
 distant, abdomen finely punctate . . . . . *stolidus*, Blkb.
- 28 Seriate punctures smaller, eyes  
 approximate, abdomen strongly  
 punctate . . . . . *lilliputanus*, Blkb.
- 29 47 Elytra obscurely coloured (dark-  
 green, blue, or purple).
- 30 38 Elytra striate.
- 31 35 Striæ deep, intervals lightly punctate.
- 32 34 Legs dark.
- 33 Length greater than twice breadth
- 34 Length equal to twice breadth  
 (larger than preceding) . . . . . *diaperoides*, Blkb.  
*queenslandicus*, Blkb.
- 35 Legs red, length less than twice  
 breadth . . . . . *tibialis*, n. sp.
- 36 38 Striæ lightly impressed.
- 37 Form widely ovate and convex,  
 tibiae ferruginous . . . . . *corpulentus*, n. sp.  
*foveolatus*, Macl.
- 38 Form much narrower, tibiae black
- 39 47 Elytra seriate-punctate.
- 40 Legs dark, seriate punctures fovei-  
 form . . . . . *porosus*, Blkb.
- 41 47 Legs red.
- 42 Form widely ovate (length less than  
 twice breadth) . . . . . *convexus*, Pasc.
- 43 47 Form much narrower (length equal  
 to twice breadth).
- 44 46 Colour subopaque, seriate punctures small.
- 45 Eyes subapproximate . . . . . *convexusculus*, Macl.
- 46 Eyes not approximate . . . . . *tarsalis*, Pasc.
- 47 Colour very nitid, seriate punctures  
 large . . . . . *lindensis*, Blkb.
- 48 58 Elytra brightly coloured or  
 metallic.
- 49 Finely striate, under-side red . . . . . *rufescens*, n. sp.
- 50 58 Elytra seriate-punctate.

- 51 55 Antennæ black, or nearly so.  
 52 Sides of prothorax arcuate ... .. *cupido*, Pasc.  
 53 58 Sides of prothorax nearly straight.  
 54 Colour variegated, seriate punctures unequal in size, tarsi fulvo-setose ... .. *suavis*, Blkb.  
 55 Colour almost uniform, purple-bronze, seriate punctures equal, tarsi nigro-setose ... .. *kershawi*, n. sp.  
 56 58 Antennæ red or testaceous.  
 57 Elytra variegated ... .. *ruficornis*, Blkb.  
 58 Elytra uniform blue .. .. *pivicornis*, Hope  
*indigaceus*, Pasc.  
 59 76 Pronotum brightly coloured or metallic.  
 60 70 Elytra striate.  
 61 65 Legs dark.  
 62 64 Intervals of elytra convex.  
 63 Intervals punctate, legs pitchy-brown ... .. *frenchi*, Blkb.  
 64 Intervals sublævigata, legs steel-blue ... .. *tyrrhenus*, Pasc.  
 65 Intervals flat (minutely punctate, legs black) ... .. *tropicus*, n. sp.  
 66 70 Legs red (femora yellow in *femoratus*).  
 67 Intervals of elytra strongly convex *termitophilus*, Lea  
 68 70 Intervals feebly convex.  
 69 Prothorax long and narrow, elytra violet-purple and obovate ... .. *femoratus*, n. sp.  
 70 Prothorax transverse, arcuately narrowed, elytra blue and oval... *hackeri*, n. sp.  
 71 73 Elytra substriate (striæ irregular).  
 72 Elongate and parallel, elytra variegated ... .. *æger*, Blkb.  
 73 Elongate ovate, elytra coppery-purple, punctures gold ... .. *geminatus*, n. sp.  
 74 76 Elytra seriate-punctate, pronotum green.  
 75 Antennæ and legs black ... .. *kurandæ*, n. sp.  
 76 Antennæ and legs red ... .. *exilis*, Pasc.  
 77 85 Pronotum and elytra bronze (species 10-12 mm. long).  
 78 80 Elytra striate.  
 79 Intervals more or less convex  
*A. morio*, Fab.  
*A. foveo-seriatus*, Fairm.  
*A. foveo-striatus*, Fairm.  
var. *A. uniformis*, Blkb.  
var. *A. tasmanicus*, Blkb.  
*A. curvipes*, Geb.  
(*A. alienus*, Blkb., *nom-præocc.*)  
80 Intervals quite flat, seriate punctures oblong ... .. *pascoci*, Geb.  
(*nom-præocc. cupreus*, Pasc.)  
81 84 Elytra seriate-punctate, punctures foveiform.  
82 84 Punctures purple (except in *torridus*).



- |    |   |  |
|----|---|--|
| 83 | Form widely ovate, punctures<br>round ... ..                    | <i>bicolor</i> , Fab.<br><i>tardus</i> , Blkb. |
|    | (Punctures concolourous with<br>elytra) var.                    | <i>tornatus</i> , Pasc.                        |
| 84 | Form elongate and narrow, punctures<br>elongate ... ..          | <i>ramosus</i> , Blkb.                         |
| 85 | Elytra irregularly punctate (punctures<br>not in series) ... .. | <i>variolaris</i> , Pasc.                      |

The following are the descriptions of the new species:—

AMARYGMUS CARBO, n. sp.

Convex, widely ovate, very nitid-black above and beneath, antennæ and tarsi castaneous.

*Head* minutely punctate, eyes very approximate, separated by a space about equal to length of the second antennal joint, antennæ rather long, fine, with apical-joints very little thickened, joint one unusually long, second very short, third equal to fourth and fifth combined, fourth to tenth subequal, eleventh longer than tenth, elongate-ovate. *Prothorax* very transverse,  $2 \times 5$  (vix.) mm., anterior angles a little acute (about  $80^\circ$ ) and produced, base very slightly lobate in the middle, posterior angles subacute but rounded, sides evenly but arcuately converging forwards, disc finely and closely (not distinctly) punctate, without any sign of medial line. *Elytra* very convex, wider than prothorax and oval, striate-punctate with eight well-marked striæ on each elytron (the four middle fine, the four exterior deep); the punctures therein very small, half-concealed, evenly, and rather widely placed, intervals very lightly convex near middle, strongly convex laterally, minutely punctate. *Abdomen* finely striolate, sternum slightly striolate at sides, all tibiæ nearly straight. *Dimensions*— $7.5-9 \times 5.5-5$  mm.

*Hab.*—North Queensland: Kuranda (F. Dodd); Bloomfield River (D. Le Souef).

Apparently a common species, judging by the number of specimens met with in collections. Seven specimens under examination. Less wide, more nitid, intervals more convex than *A. sphaeroides* (*infra*); it is somewhat similar in form to *A. converus*, Pasc. (a non-striate species), but its prothorax is much wider, with more approximate eyes. Much wider and more convex, eyes more approximate than *A. striatus*, MacI. Types in the author's collection.

**AMARYGMUS SPHEROIDES, n. sp.**

Widely ovate, very convex, head and prothorax opaque-black, elytra, under-side, and legs slightly nitid-black, the last red at the knees, antennæ and tarsi red or ferruginous, tarsal clothing red.

*Head* impunctate, eyes widely separated (space equal to the length of the second and third antennal joints combined), antennæ joint three little longer than fourth, joints seventh to eleventh successively wider. *Prothorax* subtruncate in front and behind (very little produced at the anterior angles or at the centre of base), anterior angles obtuse but well defined, posterior obtuse and rounded; twice as wide as long, sides rounded on hinder half, more straightly converging anteriorly, disc impunctate. *Scutellum* widely triangular, smooth. *Elytra* very convex both ways, wider than prothorax; striate punctate, with eight well-marked striæ on each elytron, continuous throughout, the punctures in striæ small, rather close, and half-concealed, intervals wide and flat on middle, slightly raised at sides and apparently impunctate. Under-side smooth, hind tibiæ strongly curved (more so than in *A. convexus*, Pasc.). *Dimensions*— $8 \times 5$  mm.

*Hab.*—Queensland: Mackay.

Two specimens, given me by Mr. French, are very like a small *A. pascoi*, Geb. (*Euripera cuprea*, Pasc.) in form and sculpture, but differ in size, colour, tarsi, and the strongly curved hind tibiæ *inter alia*. In form like *A. ellipsoides*, Pasc. (the elytra of which are not striate). Types in the author's collection.

#### AMARYNCUS ABORIGINE, n. sp.

Elongate-ovate, opaque-black above, slightly nitid beneath, antennæ and legs piceous-red, tarsi pale-red.

*Head* finely punctate, eyes distant the length of basal joint of antennæ; antennæ, all joints short, gradually enlarging to the apex, third slightly longer than fourth, eleventh nearly round. *Prothorax* moderately convex, truncate at apex, sinuate at base, not much wider at base than at apex, sides evenly rounded, anterior angles subrectangular, posterior obtuse, margins not evident from above; finely but very strongly and closely rugose-punctate (almost as in *A. rugaticollis*, Blkb.); smooth medial line distinct throughout and terminated behind in a foveate depression, with two smaller depressions limiting the central basal extension. *Scutellum* large, triangular, closely punctate. *Elytra* narrowly ovate, wider than prothorax at base, striate-punctate, intervals lightly convex, more strongly so at sides and apex, punctures in striæ very small, half-concealed and not very close; intervals microscopically punctate, with a velvety appearance; sternum and *abdomen* densely punctate; hind tibiæ slightly bent. *Dimensions*— $4.5 \times 2.5$  mm.

*Hab.*—Queensland: Mackay.

A single specimen, kindly given me some time ago by Mr. C. French. Two specimens also in Mr. Lea's collection. Most nearly allied to a *rugaticollis*, Blkb., but differs from that species in (1) still more opaque upper-surface, (2) shorter and stouter antennæ, (3) smaller and more concealed seriate punctures in the well-defined striæ, (4) shorter and more oval form. Type in the author's collection.

AMARYGMUS TIBIALIS, n. sp.

Ovate convex; head, pronotum, and under-side nitid-black, antennæ and legs piceous-red, tarsi pale-red, elytra dark purple-violet, moderately nitid, the suture black.

*Head* and *pronotum* closely and finely punctate, eyes distant the length of two basal joints of antennæ, antennæ short and stout, gradually enlarging to the apex, all joints short and closely fitted, two apical-joints widely oval. *Prothorax* wide and short, base much wider (but not twice as wide) than apex, subtruncate at base and apex, sides widely rounded. *Elytra* wider than prothorax at base, ovate, striate-punctate, punctures in striæ rather large and close (distant the diameter of one), intervals feebly convex and apparently impunctate. *Metasternum* irregularly, coarsely punctate. *Abdomen* smooth, all tibiae curved. *Dimensions*—4.2 × 2.5 mm.

*Hab.*—North Queensland: Cooktown.

A single specimen (male) in my collection was labelled by me *A. diaperoides*, Blkb., until I was able to compare it with authentic specimens of that species from the Northern Territory of South Australia. The true *A. diaperoides*, Blkb., is wider, darker in colour, with the striations more deeply marked, the punctures therein smaller and more concealed, and its intervals evidently punctate. *A. tibialis* is also near *A. rufescens* (above), but the colour differences are very marked, while the latter has much smaller seriate punctures and evidently punctate intervals. The curved tibiae alone distinguish *tibialis* from both allies, though this may be sexual. Type in the author's collection.

AMARYGMUS CORPULENTUS, n. sp.

Widely ovate, very convex; head and pronotum dull-black, elytra dull blue-green, under-side moderately nitid-black, legs and antennæ reddish-brown, femora darker, tarsi flavo-setos.

*Head* and *pronotum* microscopically punctate, elypeal suture straight and deep, eyes separated by a distance equal to the length of basal joint of antenna, the latter with joint three half as long again as fourth, fourth to sixth equal, seventh to eleventh successively enlarged and obconic,

eleventh widely oval. *Prothorax*  $2 \times 4\frac{1}{2}$  mm., truncate in front, a little sinuate at base, arcuately widened from apex to base, anterior angles acute, posterior obtuse, disc without foveæ or middle line. *Elytra* of same width at base as prothorax, widening in the middle, very convex in each direction, seriate-punctate, with eight lines of oval punctures, larger and more widely placed than in *A. convexus*, Pasc., intervals flat, minutely but visibly punctate. *Abdomen* faintly striolate, tibiae a little curved. *Dimensions*— $9-10 \times 6-6\frac{1}{2}$  mm.

*Hab.*—Queensland: Carrawal and Mount Chalmers.

Three specimens, including the sexes, received from Mr. C. French, were at first determined by the author as *A. ellipsoides*, Pasc. One specimen was sent to the British Museum, and compared with the type by Mr. C. O. Waterhouse, who very courteously took this trouble and writes that *ellipsoides* is "blacker, longer, with the interstices of elytra convex; yours is very near *A. convexus*, Pasc., but the antennæ are shorter and a trifle more slender, the elytra duller and more green, the punctuation visible; there is none in *convexus*." *A. convexus*, Pasc., is a very common South Queensland species, smaller, more nitid, the legs brighter-red, and quite distinct from the above.

#### AMARYGMUS RUFESCENS, n. sp.

Ovate convex; head and pronotum nitid-black (with the labrum and front and hind margins of pronotum reddish), antennæ, legs, and under-side red, tarsi pale-red, elytra brilliant-purple, with coppery reflections at the suture and green on the postero-lateral margins.

*Head* closely punctate, eyes distant the length of the first two antennal joints; antennæ short and thin, scarcely enlarged apically, joint three little longer than fourth, fourth to seventh short and linear, eighth to eleventh narrowly oval. *Prothorax* apex truncate, base slightly sinuate, sides lightly arcuate, base about one and a half times as wide as apex; finely, not very closely, punctate, without a medial line. *Scutellum* large, triangular, metallic. *Elytra* rather wider than prothorax, ovate; finely striate-punctate; striæ shallow but distinct, the punctures therein small, placed at a distance equal to the diameter of one, intervals flat (feebly convex at the apex and sides) and minutely punctate. Under-side rather closely striolate. *Dimensions*— $5 \times 2.8$  mm.

*Hab.*—North-western Australia.

A single specimen in the Macleay Museum is differentiated from its nearest ally *A. diaperoides*, Blkb. (of which I have seen two specimens from the South Australian

Museum, with Mr. Blackburn's label attached) by the following:—(1) Colour brighter and more brilliant (blue-black in *A. diaperoides*), (2) under-side and legs red (black in *A. diaperoides*), (3) striæ less deep, with the intervals flat. Type in the Macleay Museum.

AMARYGMUS KERSHAWI, n. sp.

Elliptic, moderately convex nitid; head, prothorax, legs, antennæ, and tarsi black (also tarsal clothing black), under-side black with metallic reflections; elytra purple-bronze with the suture and sides green.

*Head* finely distinctly punctate, eyes distant the length of basal joint of antennæ, antennæ with apical-joints enlarged, third shorter than fourth and fifth combined, third to seventh cylindrical, eighth to tenth shorter and thicker, eleventh oval. *Prothorax* ( $2 \times 3.5$  mm.), with apex produced slightly in the middle and strongly so at the acute anterior angles, base slightly sinuate, not much wider than apex, sides with basal half nearly straight, anterior half arcuate; finely, distinctly punctate, with indications of a smooth medial line; lateral margins evident from above. *Scutellum* black, triangular smooth. *Elytra* considerably wider than prothorax, oval, seriate-punctate, the punctures in series fairly large (as in *C. variabilis*, Bless.), placed at a distance wider than the diameter of one, intervals flat and strongly punctate, these punctures much smaller than the seriate. Under-side finely striolate. *Dimensions*— $7.5 \times 4$  mm.

*Hab.*—New South Wales.

A single specimen in the Melbourne Museum is differentiated from all described species by its combination of black prothorax, legs, antennæ, and tarsi, and bright varicoloured elytra. The strongly produced anterior angles and nearly straight sides of prothorax (shaped somewhat like *Chalcopterus purpureus*, Germ.) are distinctive. The elytra are sculptured somewhat as in *C. variabilis*, Bless. Type in the Melbourne Museum.

AMARYGMUS TROPICUS, n. sp.

Rather narrowly ovate, moderately convex, nitid; head, underside, and legs black, antennæ and tarsi obscurely reddish, pronotum coppery-black (black with metallic reflections), elytra more or less purple, with some green towards the sides.

*Head* minutely punctate, eyes distant the length of third antennal joint; antennæ short and fine, scarcely thickened apically, third not much longer than fourth, fourth to tenth

short and subequal, eleventh longer and oval. *Prothorax* rather narrow, slightly convex, subtruncate at base and apex, sides nearly straight, not much narrowed in front, anterior angles a little produced, acute, posterior obtuse, disc finely punctate, without medial line. *Elytra* elongate-ovate, wider than prothorax, striate-punctate, the striæ shallow with small punctures closely placed, the intervals flat and minutely punctate. *Abdomen* distinctly striolate. *Dimensions*— $6.7 \times 3.35$  mm.

*Hab.*—North Queensland: Coen River, Cape York, and Cooktown.

Six specimens from Cairns and Cape York (A. Lea), Coen River (Melbourne Museum), and Cooktown are near *A. tarsalis*, Pasc., and *A. suavis*, Blkb., but the species differs from the former of these in its metallic and evidently punctured pronotum, from the latter in the sculpture of the elytra (*inter alia*), the striæ, though fine and shallow, being evident, while the punctures are much smaller and closer than in *A. suavis*. Type in the author's collection.

#### AMARYGMUS FEMORATUS, n. sp.

Elongate, narrowly obovate, convex above and below a beautiful violet-blue nitid, femora bright-yellow, tibiæ, antennæ, and tarsi piceous-brown.

*Head* coarsely punctate, eyes widely distant, the length of the first two antennal joints; antennæ long, enlarged towards apex, third little longer than fourth, third to sixth cylindric, eighth to eleventh oval. *Prothorax* very long and convex, nearly as long as wide, greatest width in front of middle, truncate in front and behind, sides gradually widening from base to beyond the half-way, then rather rapidly but arcuately converging, all angles obtuse, the anterior much depressed, lateral margins evident from above; densely and strongly punctate, without medial line. *Scutellum* large, triangular, and punctate. *Elytra* convex, of same width as prothorax at base, gradually widening to behind the middle; finely striate-punctate, the striæ shallow, the punctures small, round, and very close (separated by a distance less than the diameter of one), intervals feebly convex and closely, minutely punctate. *Prosternum* distinctly, sides of *mesosternum* coarsely, *metasternum* and *abdomen* finely punctate. *Dimensions*— $6 \times 2.5$  mm.

*Hab.*—North Queensland (or Port Darwin?) (F. Dodd).

Mr. Dodd sent this, with other insects, shortly after his return from Port Darwin, but as no locality was affixed I am unable to state the habitat more precisely. An extraordinarily shaped insect, easily distinguished from all

described species by its unusually long subcylindric prothorax, its narrow obovate elytra, brilliant-blue colour above and below, and its pale-yellow femora. Another genus may possibly be found necessary for this species. Type in the author's collection.

AMARYGMUS HACKERI, n. sp

Convex and ovate; head blue, pronotum brilliant-purple, elytra violet-purple, with metallic reflections on suture and sides, under-side black, legs piceous-red, antennæ and tarsi clear-red.

*Head* very finely punctate, eyes approximate, distant little more than the second antennal joint, antennæ long, considerably enlarged towards apex, joint three nearly as long as fourth and fifth combined, seventh to tenth rather widely subconical, eleventh pear shaped. *Prothorax* very convex, straight in front, slightly sinuate behind, twice as wide at base as at apex, all angles obtuse but (with the margins) not evident from above, sides evenly arcuately converging forwards. *Scutellum* small, triangular, metallic-green. *Elytra* very little wider than prothorax, moderately convex, striate-punctate, the punctures in striæ very small, close and half-concealed, intervals feebly convex, except towards sides, and impunctate; under-side minutely striolate, basal joint of hind tarsi as long as the rest combined. *Dimensions*—6.5 × 3 mm.

*Hab.*—Queensland: Coen River, Cape York (H. Hacker).

A single specimen, given me some time ago by Mr. Hacker, is distinguished from its nearest ally, *A. tropicus* (*supra*), by its brilliant colour, approximate eyes, and impunctate intervals *inter alia*. Type in the author's collection.

AMARYGMUS GEMMATUS, n. sp.

Elongate-ovate, very convex; head and prothorax metallic-green, the latter purplish towards base, elytra bright coppery-purple, the punctures a brilliant-gold; under-side brownish-black nitid, legs black above, tibiæ reddish beneath, antennæ and tarsi castaneous.

*Head* densely, finely punctate, eyes very distant (about the length of the first two antennal joints), antennæ short and thickened apically, all joints unusually short, third scarcely longer than fourth, eighth to tenth subtriangular, eleventh bluntly ovate and larger than preceding. *Prothorax* convex, not much wider at base than at apex, sinuate at apex and base, the apex produced in the middle and at the anterior angles, these widely acute (about 80°), posterior angles obtuse, sides evenly, not widely, rounded, densely and finely rugose-punctate, without any medial line; lateral margins not

visible from above. *Scutellum* triangular with curvilinear sides, minutely punctate. *Elytra* very convex, of same width as prothorax at base, slightly wider behind shoulders, then gradually narrowed to the rounded apex: each elytron with eight rows of large, sometimes elongate, punctures, placed closely (the intervals between two less than the diameter of a puncture), the first series and the last forming continuous striæ, the others only striate at the apical declivity, intervals convex (strongly so at the apex). *Abdomen* smooth except for a few round punctures between the posterior coxæ, a similar cluster of punctures on the *metasternum* between the intermediate coxæ continued along the anterior margin of *metasternum*: intermediate and hind tibiæ curved. *Dimensions*— $7 \times 3$  mm.

*Hab.*—North Queensland: Kuranda (F. Dodd).

A single specimen sent by Mr. Dodd is the most beautiful *Amarygmus* known to me, the golden subfoveate punctures on the coppery-purple elytra and the metallic pronotum alone distinguishing it from all described species. In form it is very like a small *A. variolaris*, Pasc., but the punctures are smaller and more elongate with quite a different arrangement, while the prothorax is more convex and rounded at the sides than in Pascoe's species. The elytra are scarcely striate, except on the first and the external row, also at the apex, where the striæ are deep and well marked, but towards the middle the deep and close punctures, narrow, and sometimes confluent or elongate, give much the impression of striation, but the spaces between the punctures are distinctly on the same level with the raised interstices. Type in the author's collection.

*AMARYGMUS KURANDÆ*, n. sp.

Moderately convex, ovate; head, antennæ, legs, and under-side black, the last nitid, pronotum green, elytra obscure blue-green with purple reflections moderately nitid, tarsal clothing red.

*Head* densely, finely punctate, eyes separated by a distance equal in length of third antennal joint, antennæ not extending to middle of body, joint three shorter than fourth and fifth combined, apical-joints slightly enlarged, fourth to sixth equal and short, seventh to tenth subconical, eleventh longer and ovoid. *Prothorax* slightly produced in the middle and angles at apex, very slightly lobate at base, sides evenly and arcuately converging forwards, not twice as wide at base as at apex, anterior angles rectangular, posterior obtuse, margins evident from above; closely and very finely punctate and without any medial line. *Scutellum* smooth, metallic, and triangular. *Elytra* oval, moderately convex (as in *A.*



*foveolatus*, MacI.), seriate-punctate, seriate punctures rather large and oval (smaller than in *A. foveolatus*), those in the three middle rows larger than those in the others, all punctures becoming smaller towards apex, intervals flat, minutely and closely punctate; under-side (including sternum) smooth or faintly striolate. *Dimensions*—8.8.5 × 3.5-4.5 mm.

*Hab.*—Queensland: Kuranda (F. Dodd); Yandilla (F. A. Gore).

Two specimens sent by Mr. Dodd, and one in the Brisbane Museum (from Yandilla) are distinguished from other described species by the combination of coloured prothorax, black antennæ, legs and tarsi, with seriate-punctate elytra. Nearest *A. foveolatus*, MacI., it is readily distinguished by the different-coloured thorax and their produced anterior angles. Types in the author's collection.

#### TRICHAMARYGMUS, n. gen. (*Amarygminarum*).

Whole upper-surface thickly clothed with long and upright white hairs, the legs and under-surface with shorter hair, mandibles truncate at apex, antennæ very long, with joints seven and eight slightly wider than preceding, ninth to eleventh narrower than eighth, the last two subcylindric, fourth to eleventh of nearly equal length, joint three about as long as first and second combined. Elytra coarsely, unevenly punctate, each puncture bearing a long white hair, the punctures of different size and arranged in crowded rows, three or more rows forming irregular series, with convex nitid intervals, the rest as in *Amarygmus*.

#### TRICHAMARYGMUS PILOSUS, n. sp.

Narrowly ovate; head, prothorax, and scutellum black, antennæ at base piceous, apical-half of antennæ, under-side, legs, and tarsi reddish, elytra a uniform rich violet-purple, nitid, and pilose, tarsi beneath flavo-setose.

*Head* densely, rather coarsely punctate, eyes separated by a distance equal to the length of the basal joint of antennæ, ocular sulcus narrow; antennæ not enlarged at apex. *Prothorax* 2 × 3 mm., very convex, short, truncate at apex, sinuous at base, sides widely rounded, coarsely impressed with setiferous punctures, larger than those on the head, without a central line. *Scutellum* triangular and finely punctate. *Elytra* ovate convex (somewhat cylindrical), nearly twice as long as wide, intervals between series of rows minutely but densely punctate; epipleuræ coarsely punctate. *Abdomen* coarsely and sparsely punctate; *pro-* and *meta-sternum* more closely and finely punctured, especially on the flanks;

posterior tarsi with basal joint nearly as long as the rest combined. *Dimensions*—8·5-10 × 4·4·5 mm.

*Hab.*—Western Australia: Shark Bay.

Two specimens, I think both sexes, sent by that indefatigable enthusiast, Mr C French, are so different in clothing and sculpture from all *Chalcopteri* as to require a separate genus. The sculpture may be described as seriate-punctate, but in the place of defined single rows of punctures, there are irregular rows, sometimes three, sometimes four or more confused, but forming series of depressions, so that the intervals are distinctly convex. These punctures are generally large—much larger than in *C. affinis*, Bless.—but become finer at the sides, the apparently smooth intervals, under a strong lens, are seen to be very densely punctate also. Types in the author's collection.

# MECHANISM OF POLLINATION IN CERTAIN AUSTRALIAN ORCHIDS.

By R. S. ROGERS, M A., M D.

[Read June 12, 1913 ]

PLATES VI. TO IX.

*DIPODIUM PUNCTATUM*, Br Pl. vi.

The *column* (figs. 1 and 2) is about quarter of an inch long and semicylindrical in shape. It is flattened in front, the upper third of this surface being bevelled antero-posteriorly. The lid-like anther rests on its summit, and is attached thereto by a minute posterior hinge. The rostellum is on a level with the base of the anther, and immediately below the rostellum is the elliptical stigma.

There is little or no evidence of winging. In the raceme of flowers it occupies a horizontal position, but for convenience of description it will be assumed (except where otherwise stated) to be vertical. Anteriorly its central third is in close contact with the middle lobe of the rigid sessile labellum; its upper portion forms with the latter a wedge-shaped space (fig. 9), in which are the rostellum and the stigmatic cavity. The margins of the anterior surface are accurately embraced throughout their length by the lateral lobes of the labellum (fig. 3).

The *rostellum* can be seen in the immature flower as a small, blunt, and almost horizontal projection immediately above the stigma (fig. 5). It extends also horizontally backwards so as to form a sort of incomplete roof to the column. An examination of the top of the rostellum at this stage will reveal in relief the outlines of the future "disc," and passing horizontally backwards from the latter the outlines of the two pointed caudicles or "stipites." These structures have as yet no connection with the pollinia, and are developed from rostellar tissue. The disc is somewhat oyster-shaped, and lies upon the blunt point of the rostellum. At a later period well-marked separation lines appear between this portion (disc and appendages) of the pollinarium and the subjacent tissues, but even in the comparatively advanced bud it may with care and a little trouble be removed *en masse*. At this stage a rather blunt triangular tongue of tissue may be seen projecting upwards and backwards from the rostellar roof so as to insert itself into the triangular space between the anther loculi.

This subsequently extends backwards and becomes attached to the top of the column, thus forming a little raised falcate eminence, which fulfils a highly important function in accurately guiding the pollen masses when they fall from the anther-case into the most advantageous positions.

The *anther* is hemispherical, with a slight anterior projection over the tip of the rostellum. In the bud it may be lifted backwards, showing its attachment to the column and displaying its two loculi, each containing a perfectly spherical yellow pollen-mass. There is as yet no signs of dehiscence, nor is there any connection whatever between pollinia and rostellum. There can be seen, however, on the lower surface of each loculus an oblique sulcus corresponding to the depression between the two lobes of each pollen-mass. It is along this sulcus that dehiscence subsequently takes place. The two loculi do not nearly fill the anther-case. They occupy only the upper and anterior portion, and as the case rests like a small inverted basin on its rim upon the rostellar roof, the pollen-masses are in this way kept raised a little above the stipites.

The *stigma* (figs. 5 and 6) is elliptical in shape, its long axis being transverse. It is placed immediately below the tip of the rostellum. It is deeply concave, and communicates in its lowest part directly with the cavity of the ovary by means of the stigmatic canal. Situated near each end of the ellipse is a separate tiny depression. This depression is just the correct size to receive a pollen-mass.

Dehiscence of the anther is completed just as the segments of the perianth begin to separate in the act of expansion, and the pollinia still retained within the dehiscing loculi are found to be very sticky on their lower surfaces. The contour of the rostellar roof is exactly adapted to receive them when they are subsequently released and fall.

A very little later, and before expansion of the flower is complete, the anther-case becomes very hard and rigid, the pollen-masses are liberated, and each drops upon the stipes a little above the distal end, being guided accurately into position by the falcate mesial band already referred to. Bilobing of the pollinia is very slight, and only noticeable as a groove on the under-surface. When they drop from the anther they do so in such a manner that each is received by the stipes in this particular groove and becomes adherent by its own sticky secretion. This secretion is possibly selective in its action, as the pollinia never appear to become adherent to any of the adjacent parts. Possibly, however, this may be due to the fact that the stipites stand up in relief from the underlying structures. The pollen-masses do not harden *immediately* they

fall, but in a very short time assume a stony hardness which is a striking phase in their life history.

At this stage the disc and stipites are found to have undergone complete separation from the rostellum, the former being merely retained in position by its sticky under-surface. A touch on the disc now easily removes the whole pollinarium, and the pollinia undergo "the act of depression" within one minute of its removal. This "act of depression" is brought about by the curving downwards of two stipites to which the pollen-masses are attached. The pollinarium rapidly becomes hard, and the disc is firmly cemented to the object removing it. The substance fastening the pollinia to the stipites is, however, very elastic, and does not become dry like the other parts, so that the whole apparatus may remain effective, even when it has been attached for a long time to the head of a visiting insect.

If the pollinarium be now presented to the stigma, it will be found that the pollinia are so spaced as to fit exactly into the little cup-like depressions already noticed in the ends of the stigmatic cavity (fig. 6). Here they adhere, and any attempt to withdraw the pollinarium results in the separation of the masses from the stipites and their retention in the stigma, the disc and stipites being carried away by the object first responsible for their removal.

The *labellum* (figs. 7 and 8) is about half an inch long, i.e., twice the length of the column. The long middle lobe is keeled from the tip to a point a little below its centre, which marks its contact with the base of the bevelled portion of the column (fig. 9). Here it gives place to two raised lines with a tuft of hairs between them forming a pad. The tip is furnished with a woolly landing place, the hairy condition being traceable for some distance along the keel, thus forming a good walking track. The hairs point inwards towards the stigma. The lateral lobes are half the length of the middle one. They are smooth and petaloid, and clasp the column on each side of the stigma.

As already stated, a wedge-shaped space (fig. 9) containing the stigma is enclosed between the bevelled portion of the column and the labellum. Facilities are afforded a visiting insect to enter this space—a good landing place, an easy footing until it is reached. The presence of the insect is, however, strictly limited to this part of the flower, where its operations will be useful. It cannot proceed further down the column, because of the close contact of the latter with the labellum and the presence of the hairy pad. It is prevented from straying to the sides by the lateral lobes of the labellum. On entering it will not remove the pollinarium, because it

does not press against the sticky surface of the disc. It is only on retiring (and this process is made a trifle difficult owing to the direction of the hairs) that it will come in contact with the adhesive part of the disc, which it will then carry away in a position vertical to its own body. But when the pollinia perform the 'act of depression,' the pollinarium becomes horizontal, or almost so. When the next flower is visited the pollen masses are deposited in their respective cups in the stigmatic cavity, and the visitor departs bearing with it the disc and the stipites.

I do not know what the actual fertilizing agent is in the case of *Dipodium*, but judging by the size of the landing place and the strength of the labellum it is probably an insect of fair size.

#### ORTHO CERAS STRICTUM, Br. Pl. vii.B.

The conformation of the flower of this species is shown in fig. 1, pl. vii.B. The dorsal sepal (*ds*) is relatively large and hooded, enclosing within it the column and diminutive lateral petals. The linear lateral sepals (*ls*) spread horizontally on each side. The labellum (*l*) is thick, fleshy, and trilobed, the middle lobe greatly exceeding the lateral ones in size. In the mature flower the labellum lies closely reflexed against the ovary (*ov*), and at its base there is exposed a large yellow gland with a horizontal groove on its posterior surface.

It will be convenient to study the mechanism of pollination at several stages in the development of the flower.

1. In the advanced bud the lateral sepals are parallel and vertical, and the front of the hooded dorsal sepal is completely closed by the labellum, which is also at this stage vertical. The first indication that the flower is about to expand is given by a slight divergence of the lateral sepals and a slight descent of the labellum. If the column be examined at this stage (fig. 2) it will be found that the stigma is almost oval in shape, the short diameter being placed horizontally. Its anterior surface is glistening, concave, and at the base there is a well-marked funnel-shaped depression which penetrates almost, but not quite, into the stigmatic canal. Posteriorly the stigma presents a flat surface with a slight triangular mesial ridge, which terminates at the base of the rostellum. A transverse section of this ridge exposes a cavity continuous with the stigmatic canal.

The rostellum (*r*) is slightly lower than the anther-tip (*a*) and is placed vertically.

The lateral appendages (*lap*) of the column reach a little higher than the rostellum, but not quite as high as the anther-tip. Their free ends incurve towards each other. They are partly hidden by the lateral margins of the stigma, and are

better seen in fig. 3, which shows the column from the back. They are attached to the sides of the anther-case at its base. The blunt point of the anther (fig. 3, *a*) is incurved over the rostellum, and if it be examined at this stage it will be found that dehiscence has already commenced, as indicated by an oblique slit in the anterior surface of each chamber, through which the pollen can be seen. This is moderately friable and inaccessible, unless the anther is forcibly disturbed from its natural position. The pollen-masses are guarded by the anther-case behind, the stigma in front, and the lateral appendages at the sides.

2. The flower has just expanded. The labellum has descended, and the lateral sepals are almost horizontal. Dehiscence of the anther is complete. The rostellum has bent a little forward (fig. 4, *r*), and it can be seen that the pollinia are still retained loosely within the anther-case. They are united at their upper ends and are simply hung like saddle-bags on each side of the septum, which divides the case into two loculi. There is no connection whatever between them and the rostellum. They are not at all sticky, and when removed present the appearance shown in fig. 7, where their anterior surface is uppermost.

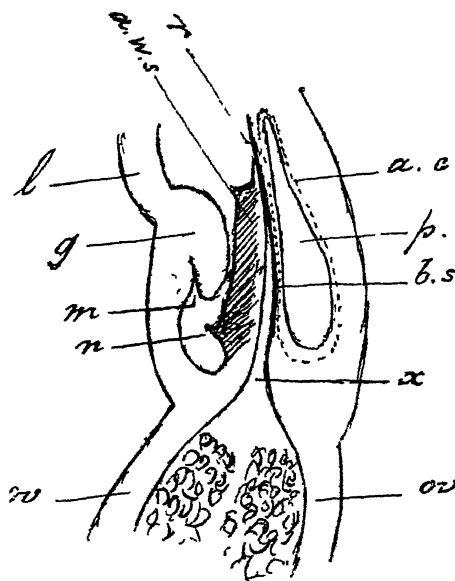
3. At slightly more advanced stage the stigma is still glistening and moist-looking. The anther-tip has retracted slightly and the rostellum continued to bend forward. At this stage the pollen-masses, still attached at their upper narrow ends, drop accurately from their loculi, one on each side of the little mesial ridge already referred to on the back of the stigma. This ridge now exactly occupies the anterior groove between the pollinia, and helps to retain them in position. This position is further secured by the lateral appendages of the column, which prevent the masses from being shifted to either side.

4. Shortly after the pollen-masses have fallen from their loculi they become adherent to the back of the stigma. The late R. D. Fitzgerald noticed and recorded this interesting fact some years ago, and thought that the subsequent pollination was effected by an erosion of the anterior wall of the stigma until the pollen gains access to that surface. I have not been able to verify this observation. Nor is there any curling back of the stigmatic margins, so as to bring the anterior surface into contact with the pollen, such as occurs in some of the *Thelymitras*.

What does happen is that about the time adhesion is going to take place there is a general softening of the stigmatic plate and some of the pollen grains germinate. The actuating cause of their germination is still obscure. So far as I am aware,

they have not been brought into actual contact with the stigmatic exudation. Numerous pollen-tubes penetrate the back of the stigma in the neighbourhood of the ridge which covers the stigmatic canal and cause the pollinia to become firmly adherent. There is no adhesion at the extreme base of the masses nor in the region of the rostellum. They become attached only along the middle third of the anterior groove which formerly separated them. The rostellum now generally collapses completely on to the anterior surface of the stigma, as shown in fig. 5, leaving the narrow ends of the pollinia exposed. The margins of the stigma are still well defined and raised, but the upper part of the anterior surface begins to lose its glistening appearance.

5. A moist, sticky depression now represents the former funnel-shaped cavity at the base of the stigma, and the whole



EXPLANATION OF THE TEXT FIGURE: *r*, rostellum; *a.w.s.*, anterior wall of stigma; *l*, labellum; *g*, gland at base of labellum; *m*, horizontal groove at back of the gland (*g*); *n*, projecting ridge at base of stigma, corresponding to the groove (*m*); *a.c.*, anther-case; *p*, pollen-mass; *b.s.*, back of stigma; *ov*, ovary.

anterior surface becomes mammilated in appearance. The labellum once more rises up in front of the column. The prominent yellow gland at its base fits exactly into the middle



of the sticky stigma, so as to press it back against the pollen-masses (see *u*, in text figure). So accurate is the apposition that even the horizontal groove (*m*) at the back of the gland finds a corresponding ridge (*n*) at the base of the stigma, which exactly fits into it.

The margins of the dorsal sepal now curl inwards and envelope the edges of the labellum. The flower has returned to its second childhood—the bud condition—and the whole of the sexual apparatus is shut off and sealed against external influences.

It is this effectual sealing up which I believe to be the important function of the labellum and its gland. *Orthoceras* blooms during extremely hot weather, December and January, when conditions are dry and arid. It would seem desirable that the sexual parts should be kept moist until fertilization has become definitely effected, a period of probably about three weeks in this species.

#### PRASOPHYLLUM GRACILE, Rogers. Pl. vii.A.

The discovery of a new locality where this hitherto rare orchid grows in great abundance, has afforded me the opportunity of carefully studying its mode of pollination.

The anther-case is about the same length as the column, reaching to the level of the rostellum. In the immature flower it completely covers the two pollinia and the caudicle, which at this stage lie closely in contact with the back of the stigma and rostellum. A strap-like caudicle attaches the pollinia to a somewhat triangular disc in the manner shown in fig. 6 of pl. vii.A. The rostellum fits into the wedge-shaped space between the caudicle and disc, receiving the latter into a slot-like depression on its anterior surface. The lateral appendages of the column are somewhat shorter than the rostellum, and protect the stigma on each side. The latter is voluminous and sticky.

The disc with attached pollen-masses can be easily removed from the rostellum by an upward shearing force. It is sticky on its rostellar side, and adheres to the object removing it. After removal the pollinia rotate through an angle of about 180°.

The flowers are much frequented by a small beetle, *Trogoderma adalaidæ*, and in several instances I found pollinia adhering to the cephalo-thorax of these insects and presenting forward in such a position that they must have been deposited on the stigma of a flower had the carrier attempted to crawl towards the base of the labellum, a locality which they appear to frequently visit.

As the flower matures the anther-point recurves (fig. 1, pl. vii.), exposing the caudicle and upper portions of the pollen-masses to the drying effects of the atmosphere. As a consequence the caudicle begins to curl upwards, dragging the pollinia with it and leaving a triangular space between itself and the back of the rostellum. This is the first stage of the complete rotation of the pollinia which subsequently occurs, unless they are removed. They can be readily detached by a needle passed into the triangular space just referred to at the back of the rostellum. This is probably what happens when removed by crawling insects. In a very large number of flowers examined I found that the pollinia had been removed and in many cases pollen-masses, completely detached from the rostellum, were seen adhering to stigmas. In some of these cases the pollinia were still attached to the rostellum, showing clearly that the masses on the stigma had been transported from other flowers. Hence it is certain that cross-pollination does occur in a large percentage of cases in this species. Whether the agent is always *Trogoderma adelaida* I am not prepared to say. It is, however, the only insect visiting these plants to which I have seen pollen-masses adhering.

Should the pollinia not be removed, the act of rotation is proceeded with. The second stage of this is shown in fig. 2, where the pollinia have assumed a position at right angles to the back of the column. The third stage is shown in fig. 3. The curling of the caudicle has proceeded to such an extent that the two masses are raised vertically above the rostellum. Finally they are deposited, usually with great accuracy, on the middle of the stigmatic surface (fig. 4). When this occurs the caudicle still remains attached by the disc to the rostellum.

Occasionally, from some accidental cause, the curling of the caudicle in the final stage of rotation is irregular, and there is a tendency for the masses to be deposited elsewhere than on the stigma. This is generally prevented, however, by the lateral appendages, which are higher than represented in figs. 4 and 5. Such a misplacement is shown in fig. 5, where the lateral appendage has saved the situation, and pollination has been successfully effected.

The fertilization of *Prasophyllum gracile* then is one of extreme interest. It is an instance where cross-pollination is clearly invited, but failing this the plant is able to accomplish the process of fertilization by itself.

Whether this method of pollination takes place in other species of *Prasophyllum* I am not at present in a position to say, but judging from the extreme degree of rotation so frequently seen in the pollinia of plants of this genus, it probably does, though perhaps not so frequently as in the species under review.

## THELYMITRA ANTENNIFERA, Hook. f. Pl. viii.A.

The flower of this species is sweet smelling, yellow in colour, and is provided with two very conspicuous reddish-brown lateral appendages to the column, which stand up like a pair of ears. These, together with the projecting, blunt anther-point, give the column a singularly bat-like appearance. Unlike many other *Thelymitras*, the flowers open freely in sunshine. The various stages in the mechanism of pollination are represented in pl. viii.A, figs. 1 to 5.

If a fairly early bud be examined (fig. 1) the column will be found to be comparatively narrow, the anther-point broad, smooth, and emarginate. The wings of the column (*w*) are imperfectly developed, the rostellum very prominent and situated in a notch in the upper border of the stigma. At this period of development the pollen-cases (*p c*) are situated vertically, and the pollinia at their lower narrow ends are in close contact with the rostellum.

A little later (fig. 2) a certain degree of obliquity has become apparent in the pollen-cases, owing to the lateral growth of the column forcing their upper and wider ends apart, while the lower ends still remain united. The wings of the column have become broader, the stigma has deepened, and its edges have become more everted. The rostellum is now very conspicuous and overhanging, and the column itself has gained slightly in height as well as greatly in width.

By the time the flower has become almost ready to expand (fig. 3) oblique dehiscence has taken place in the pollen-cases, the column has increased considerably in height, drawing up these cases, thus causing an upward tugging by the pollinia on the rostellum. The attachment of the pollen-masses to the rostellum is now exposed and is seen to be almost direct, the caudicle being virtually absent. The anther-point has become roughened and has grown forward and curved downward, thus tilting the lower ends of the pollen-cases backwards. As the pollinia are being withdrawn from their cases by the upward growth of the column this tilting movement forces their upper ends further and further backwards (fig. 4) until the masses at length lie in a horizontal plane.

When expansion takes place (fig. 5) the anther-point is found to have grown still further forward and to have curved still further downward. It has lost its greenish colour and has become quite yellow and woolly. The growing forward of the wings of the column and the deepening of the cup-like space between them, together with the movements of the anther-point, have increased the convexity of the back of the column

and completed the tilting movement of the lower ends of the pollen-cases. The pollinia are now divergent and quite horizontal, and may be easily removed by a touch on the rostellum. Their position behind the stigma renders self-pollination impossible. The rough and prominent anther-point affords an excellent landing place for an insect. The reddish-brown lateral appendages not only attract the attention of a visitor to this platform, but likewise prevent it from travelling towards the back, rather than towards the front of the column.

#### THELYMITRA MACMILLANI, F. v. M.

Unlike *Thelymitra antennifera*, *T. macmillani* is a rare orchid. Structurally it approximates closely to the former, and its mechanism of pollination appears to be the same. The flower is a salmon-red: the lateral appendages are tall, narrow, yellow structures: and the rough, yellow anther-point is longer, narrower, and more prominent than in the case of its ally.

#### THELYMITRA LUTEOCILUM, Fitz. Pl. viii.B.

As *T. antennifera* typifies the mechanism of cross-pollination in the genus *Thelymitra*, so *T. luteocilium* typifies the mechanism of self-pollination. The flowers of this species cannot be said never to open, but they open very rarely, and then only on hot days. They are, however, fertilized in the bud long before expansion is possible, and before the full size of the mature flower has been attained. One has indeed to search diligently to find a bud young enough to show the condition of the parts prior to dehiscence of the anther.

In such a bud (fig. 1) the middle lobe of the column is cristate and forms an incomplete hood. The lateral lobes are yellow, pencillate, and vertical, rising to about the same level as the middle lobe. The anther is attached to the front of the column near the top. Its rather blunt triangular point is situated between the lateral appendages. The pollen-cases form two long convex somewhat triangular bodies, with a deep sulcus in the middle line between them. Their lower borders rest on the two cusps which represent the upper margin of the stigma, and between them, where the two cusps join, is situated the rostellum. The stigma itself is placed obliquely from above downwards and forwards, and the wings of the column pass forward and unite in front of its lower border, so as to form a cup-like depression.

At a rather more advanced stage (fig. 2), but long before the flower is capable of expanding, the pollen-cases dehisce in a valvular way along their internal and lower borders, exposing the very granular pollen within them. There is no

connection between the pollinia and the rostellum. The column has grown in height, carrying the anther with it; but the anther-case still guards the pollen in such a way that when it falls it can only do so in one direction, *viz.*, down upon the stigma. The closed segments of the perianth no doubt help to further facilitate and ensure this result. In the bud the labellar petal is in close apposition with the front of the column and extends slightly beyond lateral appendages.

At a still later stage of development (fig. 3) the column has increased in height and width, the dehiscing margins of the pollen-cases have retracted far back, and the friable pollen is seen to be massed upon these and upon the interlocular septum, just above the rostellum and the stigma. Some of it has already fallen upon the latter. The falling of the pollen is brought about by the ordinary action of gravity, by the shaking of the flower, or by the movement involved by the separation of the cases from the pollinia and the upward movement of the anther itself.

Very often after most of the pollen has fallen a considerable quantity still adheres to the shrivelled cases for a time, but eventually reaches the stigmatic surface. Any pollen failing to fall directly upon this surface will, nevertheless, be caught in the cup-like depression (fig. 4) formed by the wings of the column at the base of the stigma, and will in this way be available for purposes of fertilization.

The function of the pectinate appendages is not very clear. Possibly they are intended to guard against misplacement of the pollen in an upward direction, such as might occur from violent shaking of the flower in windy weather.

The whole process of dehiscence of the anther and subsequent pollination may be observed at leisure by stripping the perianth from a suitable bud and watching the column on a warm day.

#### THELYMITRA FUSCOLUTEA, Br. Pl. ix.A.

The flower of this orchid is yellow with dark-brown spots, and is sufficiently conspicuous to suggest cross-pollination. Such, however, does not appear to be the case. The flowers open in hot weather, and nearly all become fertilized. On twenty-two plants chosen at random I counted 104 flowers. Out of those ninety-nine were fruiting. The plant blooms in November and December, the hot weather apparently being advantageous in several ways, especially in drying and pulverizing the pollen. The anterior or labellar petal is more differentiated in this species than in most *Thelymitras*, and is always shorter and narrower than the lateral petals.

The *column* is peculiar. In its lower two-thirds (fig. 1) it is expanded into wide wings, which pass upwards and forwards and unite so as to form a combed hood over the anther. The upper third is produced, external to this hood, into a dorsal clavate undivided process (fig. 2). The roof of the hood along the line of union of the two wings is tomentose, and reaches to about the same level as the dorsal process of the column.

The *anther* (fig. 1) is attached to the base of the column and is, with the exception of its point, hidden until maturity of the flower behind the stigma. Its point (figs. 1 and 2) is produced into a long, blunt, recurved, finger-like process. This does not reach the roof of the hood until the flowers are ready to expand. The pollen is very friable, there is no sign of a caudicle, and no very definite connection between the rostellum and pollinia. The former is, however, sticky, and a small quantity of pollen adheres to it when pulled forward with a needle-point. It is not possible to remove the pollinia, however, by touching the rostellum, as in the case of cross-fertilizing plants.

The *stigma* (figs. 1 and 2) lies in the lower part of the concavity formed by the column and its wings. It is very sticky and somewhat triangular in shape. The lower part of it is concave, and projects obliquely forward.

The *rostellum* is well marked, and occupies the upper angle of the stigma.

As the flower matures the anther is carried slightly upwards until its point touches the hood and the upper parts of the pollen-cases become exposed (fig. 3). An oblique dehiscence of the cases then takes place, leaving a comparatively small portion of the pollinia uncovered just above the rostellum and upper border of the stigma. This soon dries, and crumbling away falls upon the rostellum and upper part of the stigma (fig. 4). In hot weather, when the flowers open freely, the process appears to be facilitated by the hardening and bending forward of the rostellum. As some pollen has become adherent to it, a degree of slight traction is exerted upon the masses, helping them to rupture and fall more freely upon the stigma (fig. 5). More frequently, however, the rostellum undergoes a degenerative process of black cicatrization or necrosis (fig. 6). The contraction thus caused increases the area of pollen exposed and assists materially in pollination. Then, too, the bending forward of the anther over the stigma, which occurs about this time, is also a beneficent factor in the process which must not be overlooked. Apart from these physical factors, I believe that the breaking up of the pollen

masses is hastened and assisted by numerous minute crawling insects which seem to frequent these flowers in great numbers.

THELYMITRA VENOSA, Br. Pl. ix.B.

This pretty swamp form with its dainty blue flowers would, one would think, prove sufficiently attractive to induce many insects to visit it. Nevertheless, its mechanism is adapted entirely for self-pollination, which, as in the case of *T. luteo-cilium*, is accomplished in the very early bud long before there is any possibility of expansion of the flower. It blooms in December, and the flowers open freely in the sunshine.

The *column* is winged, its lateral appendages erect, rather blunt, spirally twisted, not pectinate. These appendages are connected to each other and to the back of the anther towards its base by an inconspicuous crest. They do not reach the level of the anther-point when dehiscence takes place, but may subsequently much exceed it, owing to alterations in the position of the anther itself.

The *anther* is attached close to the top of the column, and even in the very early bud it will be found that only a small portion of its base lies below the level of the upper border of the stigma and that its bifid point is already carried well forward, so as to cause the pollen-cases to overhang the stigmatic surface. The pollen-cases are very protruberant, and there is no caudicle and no connection of any kind between the pollen masses and the rostellum.

The *stigma* is placed in a plane making an angle of about  $45^{\circ}$  with the vertical column, its upper margin is bicusped, and the wings of the column unite, so as to form a sort of cup at its base.

The pollen is very friable, and, as already stated, dehiscence of the anther takes place in the early bud (figs. 1 and 1a). The pollinia cannot be removed by touching the rostellum.

Just before expansion of the flower the anther assumes an angle of about  $45^{\circ}$  with the column (figs. 2 and 2a), thus bringing its point to a lower level than that of the lateral appendages. There is thus an angle of about  $90^{\circ}$  between anther and stigma, and the granular pollen falls plentifully upon the latter (figs. 3 and 3a). Loss is guarded against by the retracting anther-cases above and the cup-like depression at the base of the stigma below.

By the time the flower has become fully expanded (figs. 4 and 4a) the anther is almost horizontal, and the stigma has lost its glistening appearance; it has become tumid, and has swollen up to a level with the edges of the column cup.

## DESCRIPTION OF PLATES

## PLATE VI.

*Dipodium punctatum*, Br.

Fig. 1.—Column from the front.  $\times 3$ —*a*, hemispherical, lid-like anther. *r*, rostellum; *s*, stigma.

Fig. 2.—Column from side.  $\times 3$

Fig. 3.—Column and labellum from the side ( $\times 3$ ), showing—*col*, column; *a*, anther; *l*, labellum (middle lobe); *lc*, lateral lobes of labellum, embracing column on each side of stigma.

Fig. 4.—The same seen from back of column. Lettering as in fig. 3. Note the hairy landing stage on tip of labellum. The hairs are directed inwards towards the column.

Fig. 5.—The top of the column and rostellum, from a bud, just before expansion. The anther with its contained pollen-masses has been removed, showing—*d*, the disc developed from the rostellum and overhanging the stigma; *c*, the false caudicle or “stipes,” developed also from rostellum, and growing backwards from the disc; *t*, a triangular tongue of tissue rising in a sickle-shaped eminence between the stipes. This is quite short in the young bud, but gradually grows backwards until it unites with the back of the column; *b c*, back of column; *s*, stigma.

Fig. 6.—Stigma very much enlarged, showing—*dep*, the little depressions in its floor into each of which a pollen-mass is subsequently deposited.

Fig. 7.—The labellum seen from the top ( $\times 3$ ), showing—*ml*, the middle lobe with its hairy tip; *lc*, the lateral lobes.

Fig. 8.—The same seen from the side.

Fig. 9.—Column with labellum in position. Half the labellum has been removed by a longitudinal section. Note its close contact with the middle third of the column, just below the bevelled portion of the latter, so as to show the triangular space in which are situated the stigma and disc—*t s*, triangular space; *col*, column; *a*, anther; *r*, rostellum; *ml*, middle lobe labellum.

## PLATE VII.A.

*Prasophyllum gracile*.

Fig. 1.—A side view of the column, showing the anther-case retracting, thus liberating the two pollen masses, which are attached to the rostellum by a strap-like caudicle—*a c*, anther-case; *p*, pollinia; *c*, caudicle; *r*, rostellum and disc; *lap*, lateral appendages of column; *s*, stigmatic surface.

Fig. 2.—More complete retraction of the anther-case has allowed the pollinia to spring out and assume a horizontal position behind the rostellum. This is the second stage in rotation. Lettering as in fig. 1.

Fig. 3.—Represents the third stage in rotation of the pollinia. They are now vertically over the rostellum. Lettering as in fig. 1.

Fig. 4.—Complete rotation of the pollinia has taken place, and they are now adherent to the centre of the stigma, but still attached to the rostellum by their disc. The lateral appendages in this and the next figure should have been shown longer. Lettering as in fig. 1.



Fig. 5.—Owing to some uneven twisting of the caudicle the pollinia have been deposited on the margin of the stigma. The lateral appendages have prevented them from altogether going astray, and pollination has been safely effected. Lettering as in fig. 1.

Fig. 6.—A very much magnified view of the two pollen-masses (*p*), of their caudicle (*c*), and disc (*d*).

## PLATE VII.B.

### *Orthoceras strictum*.

Fig. 1.—The mature flower (natural size) from the front, showing—*ls*, the lateral sepals; *ds*, the large hooded dorsal sepal, enclosing the column and lateral petals; *l*, the labellum; *ov*, the ovary.

Fig. 2.—Front view of column of an unpollinated flower ( $\times 6$ ) from the front, showing—*a*, anther; *lap*, lateral appendages of the column; *r*, rostellum; *s*, stigmatic surface.

Fig. 3.—The same column from the back showing a posterior view of the same parts.

Fig. 4.—A side view of the column of a flower that has just expanded in which dehiscence of the anther is complete and the rostellum is beginning to bend forward—*ac*, anther-case; other lettering as in figs. 2 and 3.

Fig. 5.—Front of the column after the adhesion of the pollinia to the back of the stigma and collapse of the rostellum; *p*, free upper ends of pollen-masses; *r*, rostellum; *s*, stigma.

Fig. 6.—Back view of column shown in the last figure. The pollinia are free at their bases and upper ends, but attached in their middle third. Lettering as in fig. 5.

Fig. 7.—The pollinia,  $\times 6$ . The anterior surface is uppermost, and shows the groove, along the middle third of which they afterwards become attached to the back of the stigma.

## PLATE VIII.A.

### *Thelymitra antennifera*.

The various parts of the column are magnified by 4.

Fig. 1.—Column of rather a young bud, showing the vertical pollen-cases and smooth anther-point—*s*, stigma; *r*, rostellum; *pc*, pollen-cases; *w*, column-wing; *ap*, anther-point; *lap*, lateral appendages.

Fig. 2.—Column of more advanced bud. Note the increased growth in width; the commencing roughness of the anther-point; the obliquity of the pollen-cases. The lettering as in fig. 1.

Fig. 3.—Column shortly before expansion of the flower, showing oblique dehiscence of the pollen-cases; the marked increase in height of column drawing the cases away from the pollinia. Lettering as in fig. 1.

Fig. 4.—Column just before expansion of flower, showing the increased roughness and the curving forward and downwards of the anther-point, the tilting back of the lower ends of the pollen-cases, and also the forcing backwards of the upper ends of the pollen masses—*p*, pollen masses. Other lettering as in fig. 1.

Fig. 5.—Column of expanded flower. The pollinia are divergent, and rest in the horizontal plane behind the rostellum and the stigma; the column-wings are wide and deep: the anther-point is yellow and woolly: the rostellum and pollinia can be easily removed. Lettering as in fig. 4.

#### PLATE VIII B.

##### *Thelymitra luteocilium*, Fitz.

' Showing the front of the column (magnified 6 times) at various stages of development.

Fig. 1.—The column of a very young bud, showing the position and shape of the still closed pollen-cases, the anther-tip, the stigma, rostellum, and pectinate appendages—*s*, stigma; *r*, rostellum; *pc*, pollen-cases; *ap*, anther-point; *lap*, pectinate lateral appendages.

Fig. 2.—A slightly more advanced stage, showing the pollen-cases beginning to dehisce. The friable pollen is seen between the receding margins. Lettering as in fig. 1.

Fig. 3.—A still more mature column. It has grown taller and wider; the anther has been carried up with its growth, the dehiscent margins have retracted greatly; the pollen has massed itself over the rostellum and stigma; some has fallen upon the stigmatic surface. Lettering as in fig. 1.

Fig. 4.—Column in which pollination has been completed. The pollen-cases are empty, showing the inter-locular septum between them. Pollen is seen on the surface of the stigma and massed up in the cup-like depression at its base. Lettering as in fig. 1.

#### PLATE IX.A.

Column of *Thelymitra fuscolutia* (magnified 3 times), showing various stages in the process of pollination.

Figs. 1 and 2 show the structure of the column before dehiscence of the anther. Note the wings of the column widely expanded into a combed hood. In fig. 2 one side of this expansion has been cut away, so as to show the attachment of the anther to the column and the position of the pollen-cases relatively to the stigma. They are well behind the stigma, and cannot be seen from the front at this stage. Note also in this figure the obliquity of stigma and the peculiar dorsal appendage (or middle lobe) of the column—*x*, dorsal appendage of column; *ap*, anther-point; *w*, wings of column; *r*, rostellum; *s*, stigma; *pc*, pollen-case.

Fig. 3.—A more advanced stage. The growth of the column has brought the pollen-cases above the level of the stigma, oblique dehiscence has already commenced exposing a small area of pollen in each case. Lettering as in figs. 1 and 2.

Fig. 4.—Front view of column at a slightly later stage. Pollen has fallen on the rostellum and upper part of the stigma. The anther has inclined further forward. Lettering as in figs. 1 and 2.

Fig. 5.—Front view showing a column in which the rostellum has fallen forward, so as to widen the space through which the pollen escapes on to the stigma. Lettering as before.

Fig. 6.—Front view of column in which necrosis of the rostellum has taken place, thus effecting the same object as in fig. 5. Lettering as before.

PLATE IX.B.

Column of *Thelymitra venosa*, Br. (magnified 4 times), showing various stages in the process of pollination

Figs. 1 and 1a.—Front and side views of column in early bud before expansion has taken place. The bifid anther-point is higher than the lateral appendages, and the pollen-cases have already begun to dehisce, thus exposing the granular pollen. The turgescence of the pollen-cases can be particularly well seen in the side view (fig. 1a)—a *p*, bifid anther-point; *p c*, pollen-cases (dehiscing); *p*, pollen; *s*, stigma.

Figs. 2 and 2a.—Front and side views of the column at a later stage, when the anther has descended to an angle of  $45^{\circ}$  with the column, and its point has assumed a lower level than the lateral appendages. Pollen is beginning to fall freely upon the stigma. Lettering as in figs 1 and 1a.

Figs. 3 and 3a.—A rather more advanced stage than shown in the last figures. Lettering as in figs 1 and 1a.

Figs. 4 and 4a.—Front and side views of the column after expansion. The pollen-cases are retracted and practically empty; the anther is almost horizontal, and the stigma is swollen and tumid.

A NEW GENUS OF CHALCIDOID HYMENOPTERA OF THE  
FAMILY MYMARIDÆ FROM TASMANIA.

By A. A. GIRAULT.

(Communicated by Mr. A. M. LEA.)

[Read April 10, 1913.]

The following genus was found in a collection of parasitic Hymenoptera loaned to me for study by the South Australian Museum. It is the third genus of the family which is peculiar to Australia, so far as is yet known.

Tribe ANAPHINI.

POLYNEMOIDEA, n. gen.

♀. With the general habitus of *Polynema*: venation and wings of *Cosmocomoida* but the marginal fringes are long; antennæ of *Polynema* but the club is indistinctly 3-jointed; tarsi 4-jointed, the proximal joint long; abdomen subsessile, no distinct petiole, no phragma, the ovipositor very long and slender, inserted at base and much exerted beyond tip, curved upward; the exerted portion equals more than the length of the abdomen, which is ovate. Parapsidal furrows complete; scutellum rectangular, wider than long, followed by a still larger, hemispherical mesopostscutellum; propodium still longer, large. Ocelli in a triangle, the lateral ones rather distant from the eyes. Antennæ 11-jointed, the club 3-jointed, as in *Stethynium*. Marginal cilia of forewing about two-thirds that wing's greatest width. Forewings fumated, the discal ciliation moderate; antennæ varicoloured. Forelegs with strigils. Scape serrated along its vertical margin.

♂. Not known.

*Type*.—The following species.

POLYNEMOIDEA VARICORNIS, n. sp.

♀. Length, 1.50 mm. Rather large for the family. Black, the legs yellowish-brown, the first four funicle joints of the antennæ white, the antennæ otherwise black; both wings clouded somewhat throughout, but in the forewing this fumation is a stain along the anterior margin, around the apex and broadly across the wing from the marginal and stigmal veins. Forewings with about twenty lines of discal cilia: posterior wings with a paired row along each margin and a short mid-longitudinal line from apex, but sometimes cut off distad.

First funicle-joint much smaller than the pedicel, the second and third joints of the funicle very long, the second somewhat the longer, the following three funicle joints cylindrical ovate, the last joint not much more than half the length of joint 4, which is about three-fourths the length of 3: the large, ovate club about equal in length to joint 2 of the funicle. Sculpture of body fine, impunctate. (From four specimens,  $\frac{2}{3}$ -in. objective, 1-in. optic, Bausch and Lomb.)

♂. Not known.

Described from four females mounted on a card in the South Australian Museum bearing the label "Bred from wood."

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Types.*—I. 1228, South Australian Museum. Two females on a card. *Cotypes* to be deposited in the collections of the United States National Museum, Washington.

NEW GENERA AND SPECIES OF CHALCIDOID HYMENOPTERA IN THE SOUTH AUSTRALIAN MUSEUM.

By A. A. GIRALTT.

(Communicated by MR A. M. LEA.)

[Read May 8, 1913]

The following genera and species were loaned to me for study by the Public Museum of South Australia at Adelaide. The specimens are returned to that institution.

TETRASTICHINI.

QUADRASTICHUS, new gen.

♀. Agreeing with *Pentastichus*, Ashmead, but the forewings without long marginal fringes, the pedicel only as long as the first funicle-joint, which is longer than wide, the two other funicle-joints still longer and cylindrical, the flagellum a little capitate, the antennæ 8-jointed, with one very short, obscure ring-joint, the club 2-jointed, and terminating in a spinelike seta: scape long and slender. Marginal vein long but shorter than the broken submarginal, the postmarginal absent, the stigmal well developed, long. Wings hyaline. Scutum with a median grooved line, the scutellum with four. Abdomen depressed, ovate, the ovipositor not exerted. Parapsidal furrows complete. Both mandibles tridentate.

♂. Not known.

*Type* —The following species.

QUADRASTICHUS NIGRINOTATUS, new sp.

♀. Canary or golden-yellow spotted with dusky-black, as follows:—Meson of pronotum, meson of scutum centrally (divided along median line), outer lateral angle of pronotum, apices of the much-advanced axillæ (nearly opposite the black in the meson of scutum), median line of propodeum rather broadly, lateral apex of axillæ, a transverse portion of the propodeum just cephalad of each spiracle, base of abdomen transversely (obscurely, more or less), and caudad three broken stripes across the next segments, distinct only laterad (each side). Venation and antennæ pallid dusky-yellow, the legs concolorous with the body, as are also the scape and pedicel (except at base). Impunctate. Second funicle-joint longest, the third next, distinctly longer than the first: the club-joints subequal.<sup>(1)</sup> Length, 1.25 mm.

<sup>(1)</sup>The magnification of this and all the following species is  $\frac{3}{8}$ -in. objective, 1-in. optic, Bausch and Lomb.

Described from one female specimen remounted in xylol balsam from a card.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1230, South Australian Museum.

QUADRASTICHODES, new gen.

♀. Agreeing with *Tetrastichodes*, Ashmead, but the antennæ 13-jointed, with four narrow ring-joints, 4 funicle-joints, and a 3-jointed club, whose distal-joint is a jointlike terminal cone like a thick spine but a true joint: scape cylindrical oval, unusually thickened and armed with a coarse scaly sculpture; pedicel also similarly sculptured. Mandibles tridentate. Scutellum with four deep grooves, the propodeum with a distinct median carina, laterad of the spiracle with sparse thimble punctures. Postmarginal vein three-fourths the length of the stigmal. Wings hyaline, ample, the marginal vein long.

♂. Not known.

*Type.*—The following species.

QUADRASTICHODES CYANEIVIRIDIS, new sp.

♀. Brilliant, shining, metallic blue-green with the velvety sculpture of *Tetrastichus*, including the disk of the propodeum. Legs straw-yellow, the coxæ metallic like the body. Abdomen polygonally sculptured, the polygons regular hexagons. Femora darkened proximad. Pedicel as long as the first funicle-joint, which is longest of the funicle, much longer (about  $2\frac{1}{4}$  times) than wide, the others shortening. Proximal club-joint subequal to the distal funicle-joint, which is somewhat longer than wide. Length, 2.35 mm.

From two females on cards.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1231, South Australian Museum. The above specimens (2 cards, 1 pin) and a slide bearing the head.

TETRASTICHUS, Haliday.

TETRASTICHUS MITTAGONGENSIS, new sp.

♀. Like *queenslandensis*, but the propodeal spiracle laterad of the lateral carina and the propodeum is longer. The scape is brown, coxæ and femora concolorous with the body. Second ring-joint very short, the third club-joint spined at apex. Length, 2 mm.

♂. Unknown.

Described from one female.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1232, South Australian Museum. The above specimen with the head on a slide.

## NEOMPHALOIDELLA, new gen.

♀. Like *Neomphaloides*, Girault MS, but the funicle-joints of the antennæ are not elongate, the pedicel only moderate in length, the three ring-joints uneven, the abdomen not slender and produced into a stylus but depressed and broadly ovate, the median carina of the propodeum single, meeting a semicircular carina before apex. Funicle-joints subquadrate, the club enlarged, 3-jointed, obliquely truncate at apex, as long as the funicle and twice wider.

♂. Not known.

*Type*.—The species described herewith.

## NEOMPHALOIDELLA FASCIATIVENTRIS, new sp.

♀. Black marked with lemon-yellow as follows:—Face and cheeks, lateral margins of scutum rather broadly (continued over the pronotum), latero-occipital angles of vertex, cephalic third or more of each parapside, all margins of scutellum (except the cephalic), postscutellum, legs except the coxæ proximad, antennæ and more or less obscure stripes across the abdomen. Wings hyaline, the venation dark-brown. Sculpture a scaly quadrangular reticulation, including the abdomen. Postmarginal vein slightly developed. Funicle-joints subquadrate and subequal, the first slightly longest. Length, 1.90 mm.

Described from a single female specimen on a card.

*Hab*.—King Island (A. M. Lea).

*Type*.—I. 1233, South Australian Museum. The above specimen and slide with an antenna.

## QUADRASTICHODELLA, new gen.

♀. Like *Quadrastichodes*, but the scutum with a median grooved line; also the distal-joint of the club (a fourth "joint" here) appears to be merely a terminal spine and not an articulated joint, the funicle plainly 3-jointed, the club 3-jointed, the last joint terminating in the spine; first ring-joint larger than the others. The scape is clavate, the coarse scaly sculpture at distal half or less.

♂. Not known.

*Type*.—The following species.

## QUADRASTICHODELLA BELLA, new sp.

♀. Very brilliant metallic-green; legs, including first two pairs of coxæ, the tegulæ and scape bright lemon-yellow, the scape verging to orange at tip, the funicle and club dark-brown. Wings hyaline. Pronotum long, also the stout abdomen. Head, abdomen, and prothorax with fine scaly



(polygonal) sculpture, also the propodeum dorso-laterally (in dorsal aspect glabrous): mesoscutum, parapsides, cheeks, and axillæ with the finer sculpture of *Tetrastichus*. First funicle-joint longest, longer than wide, the others wider than long; pedicel the longest of the flagellum. Length, 3.15 mm. Robust, long.

Described from a female.

*Hab.*—New South Wales: Lawson; and Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1234, South Australian Museum. The Lawson specimen and a slide bearing antennæ. A second specimen was in the same collection labelled Mount Tambourine. It was less robust.

### PEDIOBIINI.

#### ERIGLYPTOIDEUS, new gen.

♀. Like *Metacrias*, Girault MS., but the funicle-joints long and slender, the funicle filiform; also the postmarginal and stigmal veins are long and subequal. Also closely allied with *Nesomyia*, Ashmead, and *Eriglyptus*, Crawford, but the two-named veins are long and the club is only 2-jointed; nine antennal-joints including a very short ring-joint, the funicle 4-jointed; distal club-joint terminating in a spur which, not being a joint, is not counted. Wings hyaline, densely ciliated, the marginal fringes short. Propodeum reticulated, with no carinæ. Thorax and head polygonally punctate, the body slender, not convex. Petiole short and stout.

♂. Not known.

*Type.*—The following species.

#### ERIGLYPTOIDEUS VARICORNIS, new sp.

♀. Dark metallic-green, the scutellum and propodeum æneous, the face sunken, blue. Legs concolorous, the trochanters, tibiæ, and tarsi yellowish; scape pallid at each end, the distal club-joint yellowish-white. Length, 1.50 mm.

Described from a single female on a card.

*Hab.*—South Australia: Murray Bridge (A. M. Lea).

*Type.*—I. 1236, South Australian Museum. The above specimen and a slide bearing forewing and antenna.

### OMPHALINI.

#### SECODES, Foerster.

#### SECODES SUMNERI, new sp.

♀. Dark metallic-green, the face blue; propodeum with a short median carina and smooth but polygonally reticulated. Tarsi white except distal two joints; legs otherwise

concolorous, also the antennæ; vertex pro- and meso-thorax polygonally punctate, the abdomen sculptured like the propodeum, as long as the head and thorax combined, pointed long conic-ovate. Parapsidal furrows deep, complete. Forewings hyaline, the venation dusky-yellowish, the postmarginal vein well developed, a little longer than the stigmal; discal cilia sparse in the centre of the wing, more dense distocephalad, elsewhere practically absent with the exception of seven long regular lines extending to the apex from distal third and an eighth long regular line obliquely backward from the stigmal knob; forewings broad and ample. Third club-joint terminating in a spinelike seta. The four funicle-joints all subquadrate and subequal; one very short ring-joint. Length, 1.85 mm.

♂. Not known.

From one female on a card.

*Hab.*—New South Wales: Lawson (A. M. Lea).

*Type.*—I. 1235, South Australian Museum. The above specimen and a slide with antenna and a forewing.

Respectfully dedicated to Charles Sumner, for his addresses on war and the war systems of nations.

#### RHICNOPELTELLA, Girault MS.

##### RHICNOPELTELLA RETICULATA, new sp.

♀. Like *immaculatipennis*, but the two distal funicle-joints of the antennæ are large and subquadrate, each distinctly as long as the pedicel, the first joint much smaller and like a ring-joint, but it is twice the size of the three preceding ring-joints, the distal funicle-joint plainly more than twice the size of the distal club-joint. Pedicel all dark. Wings hyaline, the postmarginal vein a half or less the length of the stigmal. Outer half of cephalic tibia yellowish, the inner half like the body. Length, 1.55 mm.

♂. Not known.

From one female on a card.

*Hab.*—South Australia: Murray Bridge (A. M. Lea).

*Type.*—I. 1237, South Australian Museum. The above specimen, an antenna, several legs, and a forewing on a slide.

This is the fifth species of this genus, all from Australia.

#### GYROLASELLA, Girault.

♀. Like *Achrysocharis*, Girault, but the antennæ with two ring-joints, the scutellum with two longitudinal grooved lines. Flagellum capitate. Two funicle, three club-joints.

♂. Not known.

## GYROLASELLA LINEATA, new sp.

♀. Honey-yellow marked with deep metallic-green as follows:—Median line of caudal half or more of scutum, the same of scutellum to distal fifth from cephalic margin, a short transverse dash on each side of the median line of scutum just cephalad of the median green line (like the arms of a T but with all the middle portion missing); the meson of each axilla (except at each end) and narrow transverse stripes across the abdomen, joined very narrowly along the meson, the fifth line at the meson curved convexly cephalad; an X-shaped marking centrally at base of abdomen; tip of abdomen black (really tip of ovipositor valves). Wings hyaline. Antennæ and legs concolorous. Abdomen deep-yellow. Body polygonally reticulated. Length, 1.75 mm. Slender.

Described from a single female on a tag.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1238, South Australian Museum. The above specimen, the head on a slide.

## ACHRYSOCHAROIDES, new gen.

♀. Similar to the preceding genus but the postmarginal vein longer than the stigmal, the scutellum with a rather conspicuous fovea on each side of the median line, the antennal funicle 3-jointed, the club 2-jointed, the second joint terminating in a seta.

♂. Not known

*Type.*—*Chrysocharis sarcophagus*, Girault.

## CHALCIDINÆ.

## MEGALOCOLUS, Kirby.

## MEGALOCOLUS RUFINOTUM, new sp.

♀. Black, punctate, the venter of abdomen, mesal aspect; the legs (except the coxæ, proximal half or so of cephalic femur, interior of caudal tibia and the caudal femur); and the whole of the mesonotum (including scutellum and tegulæ) rufous; pedicel, first funicle-joint and tip of club fuscous; forewings irregularly stained, the venation fuscous or darker; staining accented at the stigmal vein, the latter nearly at right angles to the marginal and subequal to the short postmarginal. Posterior femur with seven teeth beneath, widely separated, the first large and obtuse, the last very small. Mandibles with two teeth, both acute, but the inner broadly bevelled off mesad. The small first funicle-joint longer than the pedicel, which is cupshaped; second funicle-joint longest, a third longer than 3, which is more than twice

the size of the first. The lateral projection on the propodeum is absent. Length, 8 mm., including stylus.

♂. Not known.

Described from a single female.

*Hab.*—Queensland: Cairns.

*Type.*—I. 1239, South Australian Museum. The above specimen on a card, plus a slide bearing female head and caudal femur.

### STOMATOCERAS, Kirby.

#### STOMATOCERAS LEAI, new sp.

♀. Wholly black; forewings with a conspicuous deep black band across them from the marginal vein, distad of this band obscurely clouded; postmarginal vein slightly longer than the marginal. Plate on end of scutellum separated into two distinct, obtuse, platelike teeth. Comblike teeth along posterior femur extending along distal three-fourths. Pedicel long, somewhat longer than the rather long first funicle-joint, the second funicle-joint longest, about a third longer than the first, which is twice longer than wide. Two platelike teeth dorso-lateral aspect of propodeum. Length, 5 mm.

♂. Not known.

Described from a single female. Respectfully dedicated to Arthur M. Lea for his contributions to the knowledge of the Coleoptera of Australia.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1240, South Australian Museum. The above specimen, plus posterior femur and an antenna on a slide.

#### STOMATOCERAS AUSTRALIENSIS, new sp.

♀. Black, the tarsi more or less suffused with reddish, the abdomen beneath ferrugineous except distad; tegulæ black. Marginal vein with a dark splotch under it, from the caudal end of which loops an obscure crescent of fuscous around to the costal margin (beyond the postmarginal vein, which is longer than the marginal); wings otherwise hyaline. Teeth of caudal femur extending along distal two-thirds; first funicle-joint over half the length of the pedicel, the second funicle-joint subequal to the pedicel and the club-joint, longest of the funicle. Length, 4.20 mm.

♂. Not known.

Described from a single female.

*Hab.*—New South Wales: Sydney (A. M. Lea).

*Type.*—I. 1241, South Australian Museum. The above specimen and posterior femur and antenna on a slide.

## TUMIDICOXA, Girault.

## TUMIDICOXA RUFICORNIS, new sp.

♀. Black, the antennæ wholly rufous, also the proximal half or more of the abdomen ventrad. Knees, cephalic tibiæ, proximal half or less of intermediate tibiæ, and all tarsi yellowish; posterior femora with from 10 to 12 teeth beneath. All funicle-joints wider than long. Plate of scutellum emarginate. Wings hyaline. Proximal third of abdomen dorsad rufous. Length, 2.75 mm.

♂. Not known.

Described from six female specimens.

*Hab.*—Queensland: Cairns.

*Type.*—I. 1242, South Australian Museum. Three females on a card, plus a slide bearing posterior femora and antennæ.

## TUMIDICOXA RUFIFEMUR, new sp.

♂. Black, the posterior femur bright red; tegulæ, knees, tarsi, much of cephalic tibia, tips of second tibiæ and two elongate spots on caudal tibiæ (one just ventrad of knee, one just dorsad of tip) lemon-yellow. Wings hyaline, the venation black. Posterior femur with nine teeth beneath. Proximal club-joint subtransverse; first funicle-joint longest of the funicle; pedicel small. Length, 2.70 mm.

♀. Not known.

Described from one male on a card.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1243, South Australian Museum. The above specimen and a slide with posterior femur and an antenna.

## TUMIDICOXELLA, new subgen.

♀. The same as *Tumidicoxa*, Girault, but the antennæ only 11-jointed (12-jointed in *Tumidicoxa*); the plate of the scutellum not emarginate and inconspicuous. Second segment of abdomen occupying over half of that region.

♂. See below.

*Type.*—The following species.

## TUMIDICOXELLA NIGRICOXA, new sp.

♀. Black and punctate, marked with red as follows:—All of legs except coxæ and the cephalic and intermediate femora near base. Forewings slightly stained. Posterior femur with eleven teeth beneath. Pedicel only half the length of the first funicle-joint, which is longest of the funicle, longer than wide, subequal in length to the club-joint. Length, 3.10 mm.

Described from a single female.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1244, South Australian Museum. The above female and one slide with posterior femur and an antenna.

*TUMIDICOXELLA TASMANIENSIS*, new sp.

♂. The same as *nigricora*, but the antennæ wholly black and the cephalic and intermediate femora are black farther distad, more than half black. Length, 3 mm.

♀. Not known.

Described from a single male on a card.

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1245, South Australian Museum. The foregoing specimen plus a slide with caudal femur and antenna.

*TUMIDICOXELLA AUSTRALIENSIS*, new sp.

♀. Black, punctate, the tegulæ, knees, and tarsi yellowish; wings hyaline. Posterior femur with nine teeth beneath, the ninth tooth very small; funicle 1 and club-joint subequal. Two elliptical lemon-yellow spots on posterior tibiæ, one just below knees, the other just before tip. Length, 2.85 mm.

Described from a single female.

*Hab.*—New South Wales: National Park (A. M. Lea).

*Type.*—I. 1246, South Australian Museum. The above specimen plus a slide bearing posterior leg and antenna.

*STOMATOCEROIDES*, Girault.

*STOMATOCEROIDES RUBIPES*, Girault MS.

Two males, one female, Cairns, North Queensland (Lea). The posterior coxæ sometimes may be nearly black, sometimes nearly all red; the other legs may be wholly red except coxæ.

*PERILAMPIDÆ*.

*PERILAMPUS*, Latreille.

*PERILAMPUS TASMANIENSIS*, new sp.

♀. Metallic-bronze, the abdomen darker with bronze reflections; legs concolorous, the tibiæ greenish, the tarsi flavous; antennæ dark-metallic; wings hyaline, the postmarginal vein longer than the stigmal. Scutellum unarmed at apex. Mandibles with three acute teeth, the outer one long. Head with striations on vertex and face. Antennæ with funicle-joints transverse but the first cupshaped, very much larger than the pedicel; 1 ring-joint, 13 joints, but 14, if a small nipple-like joint is counted at apex of third club-joint. Dorsum of abdomen finely punctulate. Length, 2.50 mm.

♂. Not known.

Described from a single female specimen on a card.

*Hab.*—King Island (A. M. Lea).

*Type.*—I. 1247, South Australian Museum. The above specimen; an antennæ on a slide.

*PERILAMPUS AUSTRALIENSIS*, new sp.

♀. Metallic cyaneus, with metallic-green reflections about the head and abdomen; tarsi light-yellow; cephalic knees and tibiae brown; legs otherwise concolorous with body; sculptured like *tasmaniensis*, but the punctures on the abdomen not quite so dense; more robust than that species, the marginal vein longer, the nipple-like distal club-joint absent; the second funicle-joint more like the first in *tasmaniensis*, the first funicle-joint in *australiensis* somewhat longer than wide and with parallel margins. Club brown. Length, 3.25 mm.

♂. Not known.

Described from a single female.

*Hab.*—New South Wales: National Park (A. M. Lea).

*Type.*—I. 1248, South Australian Museum. The above specimen; antenna on a slide.

*PERILAMPUS MITTAGONGENSIS*, new sp.

♀. Metallic blue-green, the knees, venation, and antennal club brown, the tarsi yellowish, the wings hyaline. First and second funicle-joints subequal, subquadrate; postmarginal vein twice the length of the stigmal; otherwise like the preceding but smaller. Antennal club 3-jointed. Length, 1.85 mm.

♂. Not known.

From one female.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1249, South Australian Museum. The above; antenna on a slide.

SPHEGIGASTERINI.

*SPHEGIGASTEROIDES*, new gen.

♀. Agreeing with *Pterosema*, Foerster, but the antennæ with only one ring-joint, the mandibles only bidentate, the second tooth broad, the posterior tibiae compressed toward tip, the body nonmetallic and particoloured, the forewings coloured. Antennæ 13-jointed, the flagellum clavate, the ring-joint large, the first funicle-joint subequal to the pedicel, the distal funicle-joints wider than long. Marginal vein twice the length of the stigmal, which is subequal to the postmarginal. Ovipositor not exerted, the abdomen conic-ovate, the

petiole short and stout, the second segment not occupying more than a third, its posterior margin incised at the meson. Lateral carinæ present, the median carina of propodeum single with two irregular carinæ on each side of it; propodeum rugulose, the spiracle oval.

♂. Not known.

*Type*.—*S. rufinotum*, described herewith.

SPHEGIGASTEROIDES RUFINOTUM, new sp.

♀. Shining black, the pro- and meso-thorax and head rufous; also the scape. Forewings with a large smoky blotch under the marginal vein, this blotch extending more than half-way across the wing and extending distad conically beyond the stigmal vein; caudad of it, there is obscure fumation. Head and thorax rather finely punctate. Length, 3 mm.

Described from a single female

*Hab*.—New South Wales: Sydney (A. M. Lea).

*Type*.—I. 1250, South Australian Museum. The above specimen plus a slide bearing head and antenna.

CLEONYMINÆ.

APLATYGLRRHUS, new gen.

*Type*.—The following species.

APLATYGERRHUS MAGNIFICUS, new sp.

♀. Dark metallic-green, densely punctate, but the propodeum shining, only reticulate and with a median carina; rather hairy, the eyes also. Posterior coxæ metallic-bluish; legs fuscous, except posterior coxæ and the black posterior tibiæ (middle) and middle portions of the femora of the posterior legs. Wings with a conspicuous, large, subsaggitate, smoky area suspended from the postmarginal vein and distad, the apex obscurely darkened. Postmarginal vein longer than the stigmal, which is long. Antennæ 11-jointed, no ring-joint, the club single, terminating in a conical projection and embraced by a long lateral extension of the distal funicle-joint; first funicle-joint smaller than the second, which is larger than the pedicel; other funicle-joints wider than long. Antennæ brownish toward tip. Distal funicle-joints pedunculate. Length, 4.70 mm.

♂. Not known.

Described from a single female.

*Hab*.—Tasmania: Hobart (A. M. Lea).

*Type*.—I. 1251, South Australian Museum. The above specimen and a slide with cephalic and posterior femora and antenna.



The genus is characterized by the antennal structure. Later one male and six females were found in the same collection bearing the same label and "Bred from wood." In the male, the distal funicle-joint has not the long projection.

PLATYGERRHUS, Thomson.

PLATYGERRHUS AUSTRALIENSIS, new sp.

♀. Bright metallic-green, with æneous tinges (especially axillæ, centres of scutum and scutellum), polygonally punctate, the propodeum smooth and shining with a strong median carina and more or less bluish; the spiracle round, a line of foveæ leading from its top mesad. Forewings hyaline, but with a distinct fuscous or smoky loop curving from the base of the marginal vein convexly to the stigmal vein, and when curving up to the latter suffusing indistinctly across to the costal margin in the form of a branch. Legs and tegulæ fuscous; also the scape. Postmarginal vein very long, nearly as long as the marginal. Antennal club solid, long, acuminate truncate from one side, the first funicle-joint narrower than the others, the second longest but not as long by far as the long pedicel, which is subequal to the club; no real ring-joint; 11 joints. Eyes, head, and thorax pilose. Posterior tarsi white, their tibiæ whitish at tips. Length, 4.10 mm.

♂. Not known.

Described from a single female labelled "Bred from wood."

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1252, South Australian Museum. The above specimen and a slide with antenna and posterior tibia.

PLATYGERRHUS ANNULICORNIS, new sp

♀. Dark metallic-green and punctate, the wings hyaline, the coxæ concolorous except at tips, the legs brownish-yellow; antennæ black, just before tip encircled by a broad ring of yellowish-white (distal three funicle-joints); stigmal vein shorter than usual. Second funicle-joint nearly as long as the pedicel, the club oval; all funicle-joints longer than wide. Length, 5.20 mm.

♂. Not known.

From one female labelled "Bred from wood."

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1253, South Australian Museum. The above specimen; a slide bearing posterior leg and antenna (also the head of a male *Platygerrhus magnificus*).

PLATYGERREUS TASMANIENSIS, new sp.

♀ The same as *australiensis* but smaller, and the forewings in addition to bearing the same pattern have their tips also fuscous and the backward branch of the loop is more distinct. Moreover, in this species the second funicle-joint is shorter and also the pedicel in relation to the club. Length, 3 mm

♂. Not known.

Described from two specimens.

*Hab*—Tasmania: Hobart (A. M. Lea)

*Type*.—I. 1254, South Australian Museum. The two specimens above (2 pins) and a slide bearing cephalic and posterior femora and antennæ. Later a male was found labelled in addition 'Reared from wood.'

AMEROSTENUS, new gen.

♀. Agreeing tolerably well with *Merostenus*, Walker, but the antennæ with four ring-joints and a 3-jointed club, 13-jointed; flagellum cylindrical, the first two funicle-joints subequal, longest of the flagellum, each over a half longer than the fourth (distal) funicle-joint, which is subquadrate. Parapsidal furrows complete; scutellum with a transverse groove before apex. Propodeum with a median carina, which divides at base; its spiracle round. Postmarginal vein nearly as long as the marginal, the stigmal shorter. Pronotum rather large. Abdomen long and pointed, conic-ovate, produced beneath near base. Forewings obscurely stained. Femora subsimple. Scutellum broadening distad. Mandibles 4-dentate, the inner tooth truncate and broad. Eyes naked

♂. The same, the abdomen depressed.

*Type*.—*Amerostenus australiensis*, new sp.

AMEROSTENUS AUSTRALIENSIS, new sp.

♀. Bright metallic blue-green, the antennæ, coxæ, and femora concolorous, also the tibiæ along proximal half, the remainder of the legs reddish-brown. Venation dusky-brown. Forewings obscurely stained. Body densely reticulated, the scutellum and parapsides not as rough as the scutum. Length, 5.20 mm.

♂. The tibiæ all dark. Length, 4.50 mm.

Described from one male and three females on a card.

*Hab*.—Tasmania: Hobart (A. M. Lea).

*Type*.—I. 1255, South Australian Museum. The above specimens and a slide with a head. Later two more females were found belonging to the same series and labelled "Bred from wood."

## PODAGRIONINÆ.

## PODAGRIONELLA, Girault.

## PODAGRIONELLA HYALINA, new sp.

♀. Dark metallic-green, the wings hyaline. Venter of abdomen and the legs, excepting coxæ and the posterior femora, reddish-brown, the coxæ concolorous, the caudal femora with more or less metallic-green. Antennæ fuscous, the scape metallic toward tip. Posterior femora with eight teeth, the third one minute, barely indicated, the others distinct, the first longest. Distal funicle-joints wider than long, the club enlarged, deep-black and solid. Petiole of abdomen very short. Propodeum without lateral carinæ, the median carina V-shaped from base, each arm running meso-caudad. Ovipositor black, longer than the body. Stigmal vein very short. Length, 2.20 mm., excluding ovipositor.

♂. Not known.

Described from one female on a card.

*Hab.*—Queensland: Longreach (A. M. Lea).

*Type.*—I. 1256, South Australian Museum. The above specimen; one slide bearing posterior leg and antenna.

## MEGASTIGMINÆ.

## MEGASTIGMUS, Dalman.

*Synonym:* XANTHOSOMOIDES, Girault.

The antennal club in this genus is 3-jointed, the joints not very distinct, hence the antennæ 13-jointed. There is but one ring-joint.

## MEGASTIGMUS MACULATIPENNIS, Girault.

One female like this species, but the propodeum nearly wholly ochreous, the abdomen with at least two transverse brownish stripes across proximal half and the first funicle-joint twice longer than broad at apex. Labelled "Adelaide. Barringer." Reared from a gall.

## MEGASTIGMUS TASMANIENSIS, new sp.

A Tasmanian species, black with a yellow collar, was labelled "Reared from larvæ of flies attacking *Helichrysum scorpioides*. R. A. Black." They were accidentally destroyed. However, the collar and the legs (except coxæ) and the lower third of the face, lemon-yellow. Antennæ brownish, the first funicle-joint only a third longer than broad.

*Type.*—I. 1257, South Australian Museum. One slide—posterior legs, antennæ, and two heads.

## MEGASTIGMUS LONGICAUDA, new sp.

♀. Like *fulvipes* but much less robust, the ovipositor greatly lengthened, distinctly much longer than the whole body. The first funicle-joint twice longer than broad, subequal to the pedicel, the second somewhat shorter. Pedicel long. Length, 2.85 mm., excluding ovipositor.

♂. Not known.

Described from one female.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I, 1258, South Australian Museum. The above specimen.

## MEGASTIGMUS FUSCICORNIS, new sp.

♀. Like *maculatipennis* but the propodeum black, the pedicel of the antenna short and equal to the first funicle-joint, which is only about a fourth longer than wide at apex, subequal to the second joint; also the ovipositor is shorter. Length, 2.40 mm., exclusive of ovipositor, which is distinctly shorter than the body.

♂. Not known.

Described from a single specimen.

*Hab.*—Tasmania: Burnie (A. M. Lea).

*Type.*—I, 1259, South Australian Museum.

## EURYTOMINÆ.

## PHYLLOXEROXENUS, Ashmead.

## PHYLLOXEROXENUS FUSCIPENNIS, new sp.

♂. Reddish-yellow, the antennæ, the legs (including coxæ), and the face honey-yellow; propodeum, the abdomen with its long petiole, cephalic margin of mesonotum, the centre of the occiput, dorsad, and the area containing the ocelli black, the marginal vein fuscous; submarginal vein mostly pallid. Forewing smoky out beyond the end of the stigmal vein from base, accented under the marginal vein and interrupted by several longitudinal false veins. Umbilicately punctate. Mesopleurum more or less black. Marginal vein thickened, nearly twice the length of either the stigmal or postmarginal, which are short and subequal. Antennæ 10-jointed, one large ring-joint, the joints following long and cylindrical, subpedunculate, the distal funicle-joint only about two-thirds the length of the proximal, shortest of the funicle, shorter than the club-joint. Posterior tibia with one spur. Length, 3.75 mm.

♀. Not known.

Described from one male on a card.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I, 1260, South Australian Museum.

## BRUCHOPHAGUS, Ashmead.

## BRUCHOPHAGUS NIGER, new sp.

♀. Black, the wings hyaline, the venation pallid; abdomen smooth and shining, the fourth and fifth segments longest, the fifth somewhat longer than the fourth, either much longer than any of the others, the sixth transverse. Antennæ 11-jointed, the club enlarged, black, the scape fulvous, the first funicle-joint twice the length of the pedicel and longest, the funicle-joints bevelled off at each end along one side. Knees, tips of tibiæ, and tarsi pallid-yellow. Length, 2.85 mm.

♂. Not known.

Described from one female.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1261, South Australian Museum. The above specimen; a slide bearing posterior legs and antenna.

## EURYTOMA, Illiger.

## EURYTOMA LINCOLNI, new sp.

♀. Black, punctate, the abdomen reddish except at proximal third dorsad, the wings hyaline, the flagellum (including pedicel) black, the scape brownish at extreme base; legs, except coxæ, red-brownish, paler at the tarsi; petiole of the abdomen black. Postmarginal vein slightly longer than the stigmal. Tegulæ brown. Funicle-joints ovate, the first longest, much larger than the pedicel. Length, 2.50 mm.

♂. Not known.

Described from one female. Respectfully dedicated to Abraham Lincoln.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1262, South Australian Museum. The above specimen and a slide with an antenna and posterior leg

## PHYLOXEROXENOIDES, new gen.

♀. Differing from *Phylloxeroxenus*, Ashmead, in having the funicle-joints of the antenna transverse after the first; antennæ 11-jointed. Posterior tibia with one spur.

*Type.*—The following species.

## PHYLOXEROXENOIDES NIGER, new sp.

♀. Black, the abdomen shining, the wings hyaline, the postmarginal and stigmal veins nearly equal; pronotum with a yellowish spot on each side, cephalad; venation pallid. Abdominal petiole short but distinct. Legs, except the coxæ proximad, and the scape, except toward the tip, reddish-brown, the flagellum reddish-brown distad of the third funicle-joint, clavate; first funicle-joint subquadrate, not quite as

long as the pedicel; other funicle-joints subequal in length but widening. Club ovate, wider than funicle, its first joint over twice wider than long. Posterior femur nearly all black. Length, 2.50 mm.

♂. Not known.

From one specimen.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1263, South Australian Museum. The above specimen and a slide with antenna and posterior legs.

## MERISINÆ.

### ROPTROCERINI

#### ORMYROMORPHA, new gen.

♀. Agreeing with *Tribeus*, Foerster, but the posterior tibiae with but a single spur, which is very long, as long as the proximal joint of the tarsi. Antennæ with three ring-joints and a solid club, 11-jointed, all the funicle-joints wider than long, shorter than the pedicel, and subpedunculate. Abdomen subsessile, stout, conic-ovate, somewhat longer than the head and thorax combined, densely polygonally reticulated or scaly and with numerous scattered thimble punctures. Forewings banded, the stigmal and postmarginal veins rather long, subequal, each about two-thirds the length of the marginal. Propodeum with a median carina two-thirds complete, but no lateral ones nor sulci. Parapsidal furrows indicated only latero-cephalad. Mandibles both tridentate. Propodeal spiracle armed with a tuft of white hairs; mesonotum pubescent, as in *Catolaccus* nearly; intermediate tarsi yellowish-white.

♂. Unknown.

*Type.*—The following species.

#### ORMYROMORPHA TRIFASCIATIPENNIS, new sp.

♀. Dark metallic blue-green, the pro- and meso-notum green, the abdomen darker; legs concolorous, the flagellum brownish (including pedicel). Forewings with three black stripes, the middle longest, the first across from the base of the marginal vein, the second from the whole of the postmarginal vein, its proximal margin convexed, the third around the apex; of the two white stripes included between them, the first is longest. Head and thorax finely shagreened, the incisions of abdominal segments smooth. Length, about 2.50 mm.

Described from a single female from Port Lincoln and two others from Sydney.

*Hab.*—South Australia: Port Lincoln; and New South Wales: Sydney (A. M. Lea).

*Type.*—I. 1264, South Australian Museum. The above specimen; a slide with head and posterior legs (and the same appendages of the following species).

ORMYROMORPHA TRIFASCIATA, new sp.

♀. The same as the preceding species but stouter, more robust, and differing specifically: the stigmal and postmarginal veins are longer, the angle between them somewhat less; the middle stripe is longer, its distal margin also convex, while the third stripe is shorter, just around the distal edge, while the two white stripes are equal in length; the stigmal vein is a little longer than the postmarginal; the abdominal segments are longer and somewhat more distinctly reticulated; the antennal joints differ in that they are all somewhat longer in the funicle and that the scape and pedicel are also brown; in the first species the second funicle-joint is longer than the first, but in *trifasciata* the second is shorter than the first. The abdomen is convex ventrad. Length, 3 mm.

♂. Unknown.

From a female on a card.

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1265, South Australian Museum. The above specimen with the appendages on a slide as noted above.

SPHEGIGASTERINI.

PARURIOS, new gen.

PARURIOS AUSTRALIANA, new sp.

♀. Shining reddish-brown, the legs concolorous, also the scape and pedicel; first two funicle-joints and the club whitish, the intervening five joints black or nearly. Abdomen with a broad darker stripe across base, a narrower one across the middle and with the conical distal third of the same dark colour, but dorsad also washed with more or less metallic-green; a broad band of opaque black across the mesonotum at the base of the forewings, the band concaved at the meson. Wings very small, casually apparently absent but with a very long marginal vein, the stigmal and postmarginal veins short but subequal; the cephalic margin bearing long stout bristles, the disc of the wing with a large fuscous cloud from the distal third of the marginal vein, the whole blade light-brown, densely pubescent distad and nearly truncate at apex; posterior wings perfect. Parapsidal furrows nearly meeting caudad. Propodeum with a median carina, whose middle is

crossed by a semicircular carina and whose apex is divided or forked. Second segment of abdomen over a third the length of that region. Antennæ 12-jointed, without a ring-joint, the first funicle-joint longest of the funicle, but not as long as the pedicel. Mesoscutum conical caudad, the light parapsidal furrows close together caudad and short, curving off laterad; scutellum with a cross line of foveæ at distal third; propodeal spiracle elliptical; no true lateral carina but several carinæ laterad of the spiracle along lateral margin and a short one caudo-mesad of the spiracle from caudad. Thorax with scattered, long, black bristles. Thorax alutaceous, with some punctures in the cross band of black, the propodeum not punctate. Abdominal petiole longitudinally striate. Otherwise like the type species of *Uros*, but the antennæ are inserted on a line with the ventral ends of the eyes, the scape very long. Mandibles with the third tooth obtuse, not broad and truncate. Length, 3.50 mm.

♂. Not known.

Described from a female labelled "Rotting leaves."

*Hab.*—New South Wales: Ourimbah

*Type* —I. 1266, South Australian Museum. The above specimen and a head plus a posterior leg in xylol-balsam, one slide.

Differing from the single North American species of *Uros* in lacking a ring-joint in the antennæ, the propodeal median groove and sulci, the shape of the meso-thoracic sclerites, the lower antennal insertion, the infuscated wings, and ringed antennæ, the slight and short parapsidal furrows. With a distinct lelapine habitus. Probably inhabiting the nest of ants.

## ISOPLATINI.

### ISOPLATOIDES, new gen.

♀. With the habitus of the *Pteromalinae* but the median carina and spiracular sulci absent on the propodeum. Head normal, the antennæ inserted below the middle of the face but slightly above an imaginary line drawn between the ventral ends of the eyes, 13-jointed, with two ring-joints, the first funicle-joint subquadrate, narrow, and smallest, the second the longest, as long as the pedicel, club short, ovate, slightly wider than the funicle. At least one mandible tridentate, the inner tooth broad. Parapsidal furrows complete but shallow; propodeum short. Wings fasciate, the marginal vein long, the postmarginal also long, three-fourths the length of the marginal and a fourth longer than the long and slender stigmal vein. Abdomen sessile, conic-ovate, flat above, convex beneath, about as long as the head and thorax



combined. Tibial spur single. Spiracle of propodeum round, the lateral carinæ present.

♂. Not known.

*Type*—The following species (*bifasciatus*).

ISOPLATOIDES BIFASCIATUS, new. sp.

♀. Dark metallic-green, the scape and tarsi fulvous, rest of legs and antennæ black or nearly; knees and tips of tibiæ lighter; venation fuscous; forewings with two fuscous stripes across them, the first from the base of the marginal vein, the second from the postmarginal vein, the first lengthening caudad, its distal margin obliquely caudo-distad, the second extends nearly to the apex, but leaves the subhyaline apical margin. Head and thorax (including the propodeum) densely punctate. Funicle-joints third to sixth subquadrate, sixth slightly wider than long; basal club-joint long, equal to half the length of the club. Length, 2.25 mm.

Described from one female.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type*.—I. 1267, South Australian Museum. The above specimen minus abdomen and a slide bearing head and posterior tibia.

ISOPLATOIDES BIPUSTULATUS, new sp.

♀. The same as the preceding species but the legs, excepting the tarsi, reddish-brown, the antennæ suffused with brown; median carina of metathorax distinct, complete, also the lateral carinæ; forewings with two fuscous dots, the first reniform and from the apex of the submarginal vein, the second rounded and much smaller, in the centre of the blade, caudo-proximad of the knob of the stigmal vein; the wings nearly subhyaline otherwise. Antennæ with the first funicle-joint shorter, more like a ring-joint. Otherwise structurally like the preceding. Length, 2 mm.

*Hab.*—Tasmania: Mount Wellington (A. M. Lea).

*Type*.—I. 1268, South Australian Museum. The above specimen plus a slide with head and posterior leg.

This species is probably not congeneric with *bifasciatus*, though it agrees structurally with the exception of the median carina of the propodeum; spiracular sulci are probably present also, though I could not be sure. Unfortunately, I could not make out the dentation of the mandibles either.

LELAPINÆ.

NEAPTEROLELAPS, new gen.

♀. Agreeing with the description of *Apterolelaps*, Ashmead, but the antennæ only 12-jointed, with one ring-joint, the mesonotal furrows absent, the posterior tibiæ armed with

two very long spurs, one of which is comparatively enormous, much larger than the other. Wings entirely absent. Abdomen with a very short, transverse petiole, but the propodeum prolonged into a hoodlike neck to meet it; no median carina on propodeum. Mandibles bi- and tri-dentate, in the latter the middle tooth shortest.

♂. Not known.

*Type*.—The species described forthwith.

#### NEAPTEROLELAPS LODGEI, new sp

♀. Ferrugineous, the pronotum darker, the mesoscutum, a stripe across the abdomen before tip and the coxæ (nearly) black; tibiæ nearly black except at tip; funicle black, the club yellowish-white, the pedicel and ring-joint dark-fuscous. Second abdominal segment somewhat over half the length of the body of the abdomen; one spur of posterior tibiæ as long as the first two tarsal joints united, the other a half shorter; posterior coxa with a tooth above just before apex. Pedicel longer than first funicle-joint, which is longest of the funicle, the distal joint wider than long. Scape somewhat dilated toward tip. Funicle-joints two and three subquadrate. Thorax coriaceous, clothed with recumbent hairs, which are not dense; posteriorly mesoscutum bevelled off and smooth to the scutellum. Proximal tarsal-joint of caudal leg black or dark. Length, 2.15 mm.

Described from a female labelled "Rotting leaves."

*Hab*.—Queensland: Mount Tambourine (A. M. Lea).

*Type*.—I. 1269, South Australian Museum. The above specimen plus a slide bearing head and posterior leg.

Respectfully dedicated to Sir Oliver J. Lodge for his interest in and contributions to a difficult field of Psychology, one of the highest importance to mankind but of the least acknowledged.

#### LELAPSOMORPHA, new gen.

♀. Agreeing with the foregoing but the antennæ only 11-jointed with one ring-joint, the club solid, the posterior tibial spurs stout and unequal but normal in length, the wings fully developed and infuscated, and the propodeum with a median and lateral carina. Otherwise the same, there being no parapsidal furrows. Stigmal and postmarginal veins long and subequal. Mandibles tridentate, at least on one side. Second abdominal segment only a fourth the length of the body of the abdomen. Funicle-joints transverse, all much shorter than the pedicel. Maxillary palpi 3-jointed, the labial 2-jointed.

♂. Not known.

*Type*.—The following species.

## LELAPSOMORPHA MYERSI, new sp

♀. Ferrugineous, the proximal half of the abdomen yellowish with one or two cross stripes of fuscous, the other half blackish, the lateral carinæ of the propodeum darkened. Legs yellowish-brown, the caudal coxa dark with a distinct purplish tinge proximad exteriorly, the caudal tibiæ fuscous. Antennæ dusky-yellowish, the club and distal two funicle-joints yellowish-white. Forewings with a straight-margined brown stripe across it at the submarginal vein just out from apex where the stripe itself is accented in the form of a deeper-coloured round spot by a roundish cluster of hooklet-like black spines; distad a very large subspherical brownish spot across the wing from the postmarginal vein, the middle of its proximal margin narrowly joining the middle of the proximal stripe, so that when looking up the wing (apicad) the large spot looks not unlike the bag of a gas balloon attached to the basket below it. Thorax with polygonal reticulation (scaliness), the scutum with obscure thimble punctures. First funicle-joint only about twice the length of the ring-joint, the funicle widening distad. Length, 2 mm.

From a single specimen.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1270, South Australian Museum. The above specimen and a slide bearing posterior legs and head.

Respectfully dedicated to Frederic W. H. Myers, the psychologist.

## EUPELMINI.

## PAROODERELLA, new gen.

♀. The same as *Ooderella*, Ashmead, but the antennæ 13-jointed with one ring-joint, the club 3-jointed; front femora beneath emarginate near apex but unarmed; intermediate tarsi armed with comblike teeth. Wings mere scales. Posterior tibiæ with one spur.

♂. Not known.

*Type.*—The species described herewith.

## PAROODERELLA APTERA, new sp.

♀. Very dark metallic-green, nearly black, the base of the abdomen with a silvery-white stripe across it above, narrower mesad, broader beneath; distal four antennal joints white; tarsi and knees yellowish; scape brownish. First funicle-joint longest, longer than the pedicel, the second and third nearly as long as the first, subequal. Mesoscutum punctate. Length, 3.25 mm.

Described from two specimens.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1271, South Australian Museum. The above specimen and a slide bearing legs and antenna.

ODERELLOIDES, new gen.

♀. The same as the preceding but with perfect wings, the antennal flagellum (excepting pedicel) wholly black. Marginal vein long and slender, the stigmal and postmarginal subequal, moderate; forewing infuscated distinctly but lightly. First funicle-joint long, subequal to the pedicel, the ring-joint longer than wide or subquadrate, narrow. Valves of ovipositor exserted for a short distance beyond apex of the abdomen. Somewhat like *Paraguaya*, but with the ring-joint and only one tibial spur on the posterior legs.

♂. Unknown.

*Type.*—The following species (*nigripurpurea*).

ODERELLOIDES NIGRIPURPUREA, new sp.

♀. Bluish-black, the head and thorax deep-blue; tip of ovipositor valves, scape, and tarsi whitish; trochanters and tips of tibiae also white. Forewings lightly stained from the base of the marginal vein to apex. Distal two funicle-joints wider than long. Length, 3.60 mm.

From one specimen.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1272, South Australian Museum. The above specimen, the legs and an antenna on a slide.

ODERELLOIDES PAX, new sp.

♀. Like the type species, but differing in the following particulars:—The abdomen is more depressed and somewhat longer, the valves of the ovipositor exserted somewhat farther, the exserted portion wholly black, the scutellum is not declivous as in the type and the stigmal vein is slightly shorter, straighter, and stouter. Otherwise, I cannot distinguish them. Scutellum narrow cephalad, broadening distad, wedgeshaped. Length, 4.10 mm.

Described from one female on a card.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1273, South Australian Museum. The above specimen on a tag and a slide bearing the legs and antennae.

ODERELLOIDES SPLENDIDUS, new sp.

♀. Brilliant metallic blue-green with purplish reflections, the abdomen and mesopleurum coppery, the scape

metallic-blue, the antennæ black, the legs concolorous, the tips of tibiæ and the tarsi whitish; exerted portion of the valves of the ovipositor as long as in *par*, black at tip, its proximal two-thirds whitish. Forewings with a distinct dusky blotch from the marginal and postmarginal veins and slightly beyond, the apex hyaline and also the rest of the wing; two-thirds the way across to the caudal margin the blotch disappears or nearly, so that it is rectangular, but irregularly so. Abdomen shaped as in *par*. Otherwise as in the preceding species, excepting that the venation and scutellum differ somewhat in details. Length, 3 mm.

Described from a single female.

*Hab.*—New South Wales: Lawson (A. M. Lea).

*Type.*—I. 1274, South Australian Museum. The above specimen and a slide bearing an antenna and the legs.

#### PARASOLINDENIA, new gen.

♀. Running to *Solindenia*, Cameron, but differing at once in the wings, which are vestigial, small but perfect, and banded with black; the head is not wider than the thorax, triangular from cephalic aspect; antennæ 13-jointed, one ring-joint, the club 3-jointed. The small wings with a long, rather broad, marginal vein, a very short stigmal with a knob, the postmarginal absent or nearly, the blade densely hispid except in places. Submarginal vein long, the costal cell wide.

♂. Not known.

*Type.*—The following species.

#### PARASOLINDENIA HEMIPTERA, new sp.

♀. Head and abdomen dark metallic-green, the thorax reddish, the legs concolorous with it; a white band across base of abdomen; proximal half of antenna yellowish-white (scape, pedicel, ring-joint, and first three funicle-joints, the third funicle-joint suffused with dusky), the rest black. Forewings fuscous and hispid from base of marginal vein to apex but interrupted more than half-way to the apex by a central, triangular naked and hyaline spot, which extends nearly to the margins from opposite sides. First funicle-joint longest but yet subequal to the third, the following shortening, the club shorter than the scape. Head with a scaly sculpture, and also the thorax and abdomen, but less rough. Posterior wings hyaline. Length, 3.50 mm.

From one specimen on a card.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1275, South Australian Museum. The above specimen with a slide bearing legs, antenna, and forewing.

## CALOSOTER, Walker.

## CALOSOTER COLEOPTERORUM, new sp

♀ Metallic blue-black, the wings hyaline, the face with slight metallic-green; antennæ and legs black, the tarsi brownish. Dimly, finely punctate. Antennæ 13-jointed, the ring-joint longer than wide, the funicle-joints all shorter than the pedicel, joints two and three longest, joint one subquadrate, slightly shorter than two; distal funicle-joint wider than long. Postmarginal and stigmal veins rather long, subequal, the stigmal curved, not half the length of the marginal. Posterior tibiæ with two small spurs; intermediate tarsi with comblike teeth, the legs normal, but the cephalic femora somewhat bent. Abdomen depressed, the ovipositor not exerted. Length, 4 mm.

♂. Not known.

From one female on a card labelled "Reared from wood "

*Hab.*—Tasmania. Hobart (A. M. Lea).

*Type.*—I. 1276, South Australian Museum. The above specimen, the legs and an antenna on a slide

## PTEROMALINI.

## MERAPORUS, Walker.

## MERAPORUS NIGRIVIRIDIS, new sp.

♀. Dark metallic-green, the head and thorax, excluding the propodeum, bronze; the abdomen shining-black; forewings with a rather obscure, round, stained spot against the submarginal vein just before its apex, otherwise hyaline. Legs, excepting coxæ, deep-fuscous; antennæ black, the scape and pedicel brownish. Marginal vein only slightly longer than the stigmal, the latter slightly longer than the postmarginal. Punctate. Propodeal spiracle long-elliptical, the lateral carinæ complete, the median carina half complete from base, the propodeum with a distinct neck. Second abdominal segment a third the length of the abdomen, the third segment a half smaller, the others much shorter. Parapsidal furrows slightly more than half complete. Mandibles 4-dentate. Pedicel much longer than the first funicle-joint, which is longest of the funicle, cup-shaped, the next joint only slightly shorter, the distal joints becoming wider than long. Second ring-joint twice the size of the first; funicle-joints widening distad. Antennæ 13-jointed, the club 3-jointed, not enlarged. Clypeus striate. Length, 2.25 mm.

♂. Not known.

*Hab.*—King Island (A. M. Lea).

*Type.*—I. 1277, South Australian Museum. The above specimen with the head and posterior leg on a slide.

## EUCHARIDÆ.

NEOKAPALA, new gen.

*Type*.—The following species.

## NEOKAPALA FURCATELLA, new sp.

♀. Dark metallic-green, the propodeum, abdomen, and head blue; legs fuscous, the antennæ black with brownish club and scape, 11-jointed, no ring-joint. Forewings infuscated distad of the distal end of the marginal vein (more proximad at caudal margin), the infuscation accented under the end of the marginal vein. Scutellum produced into a prong like the two arms of a tuning-fork, each prong about as long as the scutellum, brownish toward tip, flattened, the edges carinated; scutellum longitudinally striate. Head shining; thorax umbilicately punctate. Abdominal petiole not as long as the arms of the scutellar process. Antennæ with the funicle-joints produced from one side at apex, flattened, the club solid, ovate, the pedicel small and cupshaped, funicle-joints two and five longest, subequal, the first funicle-joint longer than the pedicel by far but cylindrical-oval, not produced. Length, 3.25 mm.

♂. Unknown.

From one female on a card.

*Hab.*—Queensland: Cairns (A. M. Lea).*Type*.—I. 1278, South Australian Museum. The above specimen and an antenna on a slide.Distinguished from *Kapala*, Cameron, by the scutellar processes, which are short, blunt at end, and forming a prong, which is high up over the base of the abdomen.

## Genus, STILBULA, Spinola.

## STILBULA BIDENTATA, new sp.

♀. Very dark metallic-green, the abdomen darker, the wings colourless, their veins very pale. Legs fuscous, the knees, posterior tibiæ, and tarsi fulvous. Scutellum bidentate, the head circularly striate, the thorax roughly punctate including the propodeum, the rather long abdominal petiole pitted. Antenna 12-jointed, of the flagellum (excluding pedicel), the first joint longest, thrice the length of the short pedicel, the club-joint shortest; excluding the bulla, scape shorter than funicle one; antennæ brownish toward tip; otherwise black; funicle-joints three and four subequal, each about somewhat over a half the length of joint one. Length, 3 mm.

♂. Not known.

Described from one female on a card.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type* —I. 1279, South Australian Museum. The above specimen and the antennæ on a slide

STILBULA AUSTRALIANA, new sp.

♀ The same as the preceding but more greenish (dark-green), the scutellum similarly slightly produced but not bidentate and with a more or less obscure median grooved line, the axillæ divided by a more or less distinct foveate suture; distal halves of femora, the tibiæ, and tarsi yellowish-brown. Abdomen as in *Eucharis*. In the antennæ, the second, third, and fourth funicle-joints are subequal, somewhat longer than wide, the first joint longest, narrowing proximad. Length, 3.10 mm.

♂. Unknown.

From one female.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type*.—I. 1280, South Australian Museum. The above specimen and an antenna on a slide.

PSILOGASTER, Blanchard

PSILOGASTER PULCHER, new sp.

♂. Metallic æneous-green, the abdomen dark; scape and pedicel yellow, the wings slightly stained, the legs, except coxæ, straw-yellow, the posterior femora washed with fuscous; venation brown, the postmarginal vein long. Scutellum with a median grooved line, otherwise simple and normal. Rugulose punctate. Antennæ 10-jointed, the joints long and cylindrical, the club shortest, the first funicle-joints longer than the scape; distal funicle-joint subequal to the club; pedicel cup-shaped, very short. Length, 4.5 mm.

♀. Not known.

From one male on a card. Differs from Brullé's *pallipes*, apparently, in having 10-jointed antennæ, though it should be compared with that species.

*Hab.*—Tasmania: Mount Wellington (A. M. Lea).

*Type*.—I. 1281, South Australian Museum. The above specimen and an antenna on a slide.

(EUCCHARIS) PSILOGASTER THEOCLES (Walker), Sydney, New South Wales.

This species must be placed here.

PSILOGASTEROIDES, new gen.

♂. Agreeing with *Psilogaster*, Blanchard, but having 12-jointed antennæ; first funicle-joint long, the others short.



♀. Not known.

Type.—*Eucharis fausta*, Walker.

Hab.—Tasmania: Hobart.

The following of Walker's species:—*Eucharis valgius*, Sydney, New South Wales; *Eucharis eribotes*, Sydney, New South Wales.

#### CHALCURELLA, new gen.

♂. The same as *Chalcura*, Kirby, but the antennæ with paired branches, the funicle-joints distad of the third, bearing a pair of branches from the apex of each joint, opposite, and forming a prong like the two arms of a tuning-fork; the second two joints of the funicle bearing but a single branch, the branches hairy; first funicle-joint very long, widening distad; the second, third, fourth, and fifth short; the sixth and following lengthening, slender, becoming as long as the first; scutellum with a median groove. Scape short. Stigmal vein quadrate, the wings hyaline. Abdomen as in *Eucharis*. Propodeum with a broad, longitudinal sulcus dorso-laterad.

♀. Not known.

Type.—The following species.

#### CHALCURELLA NIGRICYANEA, new sp.

♂. Black with a bluish tinge, the coxæ and antennæ concolorous, the femora fuscous or black-brown, the knees, tibiae, and tarsi yellowish-brown, also the tegulæ and venation. Rudely punctate, the head striate. Thorax pilose. Pedicel chocolate. Posterior coxa and abdominal petiole irregularly, and rather delicately, roughened. Tegulæ brown. Length, 4.85 mm.

From one male.

Hab.—Tasmania: Hobart (A. M. Lea).

Type.—I. 1282, South Australian Museum. The above specimen on a tag and a slide with the antenna.

#### EUCHAROMORPHA, new gen.

♂. Somewhat like *Psilogaster*, Blanchard, but the antennæ 11- to 12-jointed, with a true ring-joint, the funicle-joints cylindrical to subquadrate; postmarginal vein distinct, also the venation; scutellum with a cross-furrow before apex. Abdomen subsessile, the petiole extremely short or absent. Parapsidal furrows deep, the parapsides somewhat gibbous, also the axillæ. Head not striated, the ocelli in a small triangle. Club solid.

♀. Not known.

Type.—The first species below.

## EUCHAROMORPHA VIRIDIS, new sp.

♂. Bright metallic æneous-green, the coxæ concolorous, the legs straw-yellow, the antennæ black but with the scape and ring-joint honey-yellow, the pedicel more or less so. Venation brown. Wings subhyaline. Antennæ 12-jointed, the first funicle-joint long, twice the length of the pedicel, the second a third shorter, the others subquadrate and more or less equal; club-joint conical ovate, subequal to first funicle-joint. Head and thorax rugulose, subpunctate, not rude. Abdomen robust, sessile. Length, 4 mm.

From one male on a card.

*Hab.*—Tasmania. Swansea (A. M. Lea).

*Type.*—I. 1283, South Australian Museum. The above specimen mounted with the following species and a slide bearing an antenna (and four antennæ of the following species).

## EUCHAROMORPHA FUSCIPES, new sp.

♂. The same as the preceding but more slender, the femora along proximal half fuscous and with more or less metallic-green, the abdomen with a distinct but short petiole, the antennæ wholly black, and differ structurally in that the third funicle-joint is longer, also the club; ring-joint yellow-brown. The abdomen is smaller. Length, 3.87 mm.

Described from two males on a card with the preceding and following species, bearing the same label (second and fourth specimens from left). One of these specimens was tinged with metallic-blue, while the other was smaller and with a shorter scape.

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1284, South Australian Museum. The above specimen mounted as indicated with three antennæ on a slide with those of the other species (bottom corner of slide and upper corner).

## EUCHAROMORPHA DUBIA, new sp.

♂. The same as *fuscipes*, but the antennæ only 11-jointed, the funicle 7-jointed; the femora are dark up to the tips and with more metallic colouration. The club is longer, distinctly much longer than the long first funicle-joint, and the funicle-joints are all longer than wide. Length, 3.80 mm.

Described from one male on a card with the preceding.

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1285, South Australian Museum. The above specimen mounted with the above (the third specimen from the left) and an antenna on a slide with those of the preceding species (the antenna in the upper right-hand corner).

## ORASEMA, Cameron.

## ORASEMA PHEIDOLOPHAGA, new sp.

♀. Dark metallic-green, sometimes with a bluish tinge; abdomen coppery; wings subhyaline, the venation brown; antennæ dark metallic-green throughout; coxæ concolorous, the tarsi and tibiæ straw-yellow, the femora metallic-green, the cephalic femora less so. Thorax regulose and punctate. Scutellum rimmed at apex. Head circularly striated. Antennæ 13-jointed, with a short ring-joint, the club 3-jointed, the first funicle-joint longest, the others shortening, but all longer than wide, rectangular; club-joints more or less coalesced, yet plainly indicated. Mandibles 2- and 3-dentate, as described for the genus, flavous, fuscous at tip. Length, 2.80 mm.

♂ The same.

Described from what appeared to be four males and two females on a card labelled "Reared from pupæ obtained in nest of *Pheidole*, sp."

*Hab.*—Victoria: Geelong (H. W. Davey).

*Type.*—I. 1286, South Australian Museum. The above specimens on a card and a slide bearing head and three antennæ.

## ASTILBULA, new gen.

♀. Agreeing with *Stilbula*, Spinola, but the apex of the scutellum ending in a single small acute tooth, pointing upward, the antennæ only 10-jointed, without a ring-joint, the club solid, the first funicle-joint obconic and long, the others submoniliform; abdomen stout, depressed, oblate from dorsal aspect, the petiole moderately long; propodeum with a weak median carina. Postmarginal vein distinct. Mandibles as in *Orasema*, Cameron.

♂. See below.

*Type.*—The following species.

## ASTILBULA MAGNIFICA, new sp.

♀. Brilliant metallic æneous-green, the abdomen shining, the scutum transversely striate, the scutellum longitudinally so, both more or less irregularly; scutellum with a weak median carina. Wings hyaline. Petiole roughened. Venation brown. Legs straw-yellow brown, the coxæ and most of the femora concolorous; also antennæ, but the scape and pedicel brownish. Club-joint next longest of the flagellum. Length, 3.95 mm. Robust.

From one female.

*Hab.*—New South Wales: National Park (A. M. Lea).

*Type*.—I. 1287, South Australian Museum. The above specimen on a card and a slide bearing the head.

#### ASTILBULA PURPURA, new sp.

♂. Metallic-purplish, the abdomen much darker; knees, tarsi, and tibiae straw-yellow, the first three antennal joints brownish; wings hyaline, the venation brown. Femora and coxæ concolorous. Sculptured as in the preceding. Joints of funicle after the first cupshaped or nearly, erected on thick peduncles; first funicle-joint cylindrical, long. Abdomen ascending. Mandibles dentated as in the preceding (*i.e.*, regarding number of teeth). Length, 3.75 mm.

♀. Not known.

Described from one male.

*Hab*.—Queensland: Cairns (A. M. Lea).

*Type*.—I. 1288, South Australian Museum. The above specimen and a slide bearing the head.

#### ELASMIDÆ.

##### ELASMUS, Westwood.

##### ELASMUS CAIRNSENSIS, new sp.

♀. Like *flavipostscutellum* but the orange portion of the abdomen much longer, decidedly twice the length of the black distal portion which is at the tip and occupying not more than between a fourth and fifth of the body of the abdomen. Antennæ like those of the species named. Caudal femora metallic at proximal or upper third. Length, 2 mm.

♂. Not known.

Described from one female.

*Hab*.—Queensland: Cairns (A. M. Lea).

*Type*.—I. 1289, South Australian Museum. The above specimen (head destroyed).

#### ECTROMINI.

##### PARANUSIA, new gen.

♀. Cephalic aspect, head rounded, the antennæ inserted below the middle of the face, much below the eyes, but not near the clypeus, widely separated, the scape very long, extending far beyond the vertex, cylindrical, the flagellum compressed, clavate, the funicle-joints transverse and short, much wider than long, the club solid, no ring-joint, the antenna 9-jointed; pedicel very short. Lateral ocelli distant from the eye margins; a distinct transverse suture across face above antennal insertions. Axillæ not quite meeting inwardly. Mandibles bidentate, both teeth strong. Abdomen short,

produced ventrad, the ovipositor usually projecting some distance beyond, naked and slender. Forewings simple, infuscated, with an oblique hairless line from the junction of the marginal and stigmal veins, the marginal vein rather long but a third shorter than the postmarginal, the stigmal well developed, slightly shorter than the postmarginal. Legs normal, the posterior tibiae with one spur, the intermediate tibial spur not enlarged. Mandibles appearing acute or edentate from above (their lateral aspect). Labial palpi 3-jointed, the maxillary 4-jointed.

♂. Not known.

The cylindrical scape, cephalic characters, antennal segmentation and the long postmarginal vein serve to distinguish this genus.

*Type*.—The following species.

*PARANUSIA LONGISCAPUS*, new sp.

♀. Submetallic greenish-black, the face below the transverse suture, the mesoscutum and axillae dark-reddish; legs black, the tarsi lemon-yellow, forewings stained irregularly, the venation fuscous. Sides of thorax reddish. Antennae black. Head and thorax impunctate, finely alutaceous. Pedicel longer than any of the funicle-joints, of which the third is longest, all widening distad and prolonged at one side from apex, the sixth four times wider than long; club somewhat over half the length of the funicle. Length, 1.75 mm.

Described from eleven specimens on two cards (one pin) and mounted with ants, upon which they are probably parasitic.

*Hab*.—South Australia: Murray Bridge (A. M. Lea).

*Type*.—I. 1290, South Australian Museum. The above specimens and a slide bearing head and forewing.

CALLIMOMIDÆ.

*DIMEROMICRUS*, Crawford.

*DIMEROMICRUS AUSTRALIENSIS*, new sp.

♀. Brilliant shining metallic æneous-green with a bluish tinge, the legs concolorous excepting the knees, tibiae, and tarsi, which are lemon-yellow. Antennae and valves of ovipositor black; wings hyaline. Scape metallic; club verging to brown. First funicle-joint variable, usually smallest, all shorter than the pedicel. Second ring-joint largest. Sculpture as in type species. Mandibles tridentate. Length, 2 mm., excluding ovipositor, which is longer than the abdomen.

♂. Not known.

Described from eight females.

*Hab.*—New South Wales: Lawson, also at Forest Reefs (two females) (A. M. Lea).

*Type.*—I. 1291, South Australian Museum. Three females (Lawson) on a card and a slide bearing head, antennæ, and posterior legs.

*AMONODONTOMERUS*, new gen.

♀. Agreeing with *Monodontomerus*, Westwood, but the abdomen petiolate, the eyes naked, the posterior femora simple, not swollen nor with teeth. Scutellum with a cross furrow; ovipositor not half the length of the abdomen; abdominal segments with their posterior margin straight. Antennæ 12-jointed with one long ring-joint, the club stout, 4-jointed. Stigmal vein with a distinct neck, the postmarginal vein longer than the marginal. Antennæ short and clavate, the funicle-joints transverse.

♂. Not known.

*Type.*—*Amonodontomerus viridis*, new sp.

*AMONODONTOMERUS VIRIDIS*, new sp.

♀. Brilliant metallic-green, the antennæ, the ovipositor, and the legs (excepting coxæ) reddish-brown, the middle of the posterior femora sometimes metallic-greenish; valves of ovipositor black. Wings hyaline, the venation dusky. Head and thorax finely transversely lined and with scattered pin punctures, the latter arranged in about two transverse lines on the pronotum. Abdomen smooth and shining, but also with the punctures across the cephalic portions of the segments. Petiole roughened. Club sunkened and obliquely truncate along one side. Length, 2.50 mm.

Described from eight females on a card.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1291, South Australian Museum. Seven of the above specimens on cards (one pin).

*IDARNINÆ.*

*KOEBELEA*, Ashmead.

*KOEBELEA FUSCA*, new sp.

♀. Yellowish-brown, the abdomen transversely striped with black except at base and tip; legs concolorous, the flagellum dusky, the wings hyaline; valves of ovipositor black; ocelli in a distinctly curved line. Subpunctate, the propodeum weakly longitudinally striate centrally, laterad with weak scaly sculpture; scutellum with a grooved line near each lateral margin. Antennæ 13-jointed with two ring-joints, the club 3-jointed, the third joint terminating in a spur, which has the

appearance of being a true joint (if so a fourteenth joint); pedicel somewhat longer than any of the following joints, three of the funicle being subquadrate. Mandibles tridentate. Ovipositor very slender, curled. Postmarginal vein longer than the stigmal, which is subequal to the marginal. Axillæ with an ovate black spot in the cephalo-lateral angle. Length, 1.60 mm., exclusive of ovipositor, which is twice longer than the body.

♂. Not known.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1334, South Australian Museum. Four of nine specimens on a card and a slide with the head.

I designate the above species type of the genus.

### MONODONTOMERINÆ.

#### MACRODONTOMERUS, new gen.

♀. Like *Plesiostigmodes*, Ashmead, but the pronotum normal, not by far as long as the mesonotum; scutellum without a cross furrow; abdomen produced ventrad at middle, triangular from lateral aspect. Otherwise the same.

♂. Not known.

*Type.*—The following species.

#### MACRODONTOMERUS TRIANGULARIS, new sp.

♀. Brilliant metallic æneous-green, the knees, tibiæ, and tarsi straw-yellow, the rest of the legs concolorous. Wings hyaline, the stigmal vein very short, only half the length of the short postmarginal. Cephalic femora short, swollen, the posterior femora slightly enlarged and with a small tooth beneath before apex (also a slight indication of a second one farther proximad) and very minutely subserrulate. Antennæ with two ring-joints, the first funicle-joint longest, slightly longer than wide, shorter than the pedicel; antennæ black. Thorax finely transversely lined and scaly. Length, 2.40 mm., exclusive of the ovipositor, which is somewhat shorter than the body.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1335, South Australian Museum.

### IDARNINÆ.

#### IDARNOIDES, new gen.

♀. Like *Idarnes*, Walker, but the scutellum without grooves, the antennæ 12-jointed with two ring-joints, the funicle-joints mostly subquadrate, but the first distinctly longer than wide. Mandibles bidentate. Marginal vein twice

or more the length of the stigmal, the postmarginal long, nearly twice longer than the stigmal. Parapsidal furrows complete. Ovipositor longer than the body. Scutellum flat.

♂. Not known.

*Type*.—The following species.

*IDARNOIDES CHANNINGI*, new sp.

♀. Deep metallic blue-green, finely polygonally reticulated; wings hyaline; scape and legs straw-yellow, the pedicel brown; valves of ovipositor and flagellum black. Scape long and slender. Length, 1.65 mm.

*Hab*.—Queensland: Cairns (A. M. Lea).

*Type*.—I. 1336, South Australian Museum. Four specimens on one card and a slide bearing head and antennæ.

Respectfully dedicated to William Ellery Channing, for his efforts directed against war.

CLEONYMINÆ.

*APHOTISMUS*, new gen.

♀. Agreeing with *Photismus*, Walker, but the abdomen with a very short petiole, its body compressed appearing sub-linear from dorsal aspect and large and round from lateral aspect, the ovipositor hidden. Head from cephalic aspect sub-rectangular, a little wider than long, the antennæ inserted slightly above the ventral ends of the eyes, 13-jointed with one ring-joint and a 3-jointed club. Pronotum transverse, parapsidal furrows complete, the scutellum simple, with a cross-groove, the median carina weak, the spiracle small, round. Marginal, stigmal, and postmarginal veins about equal, the first and last a little longer, the forewing with a longitudinal, subcrescentic, fuscous band extending from apex of submarginal to apex of stigmal. Mandibles bidentate but the second tooth broad, its apex concavely emarginate. Posterior femora much swollen and with a large triangular tooth beneath near apex whose distal margin is minutely serrulate; cephalic femora also swollen but simple. Hind tibiæ with two spurs.

♂. The same.

The shape of the abdomen is characteristic.

*Type*.—The following species.

*APHOTISMUS NIGER*, new sp.

♀. Shining-black, the tibiæ and tarsi lemon-yellow, also the distal third of cephalic femora; antennæ concolorous, the funicle-joints transverse, the first only twice the size of the ring-joint, the others wider, all shorter than the pedicel;



flagellum short, clavate. Thorax finely, transversely lined and polygonally reticulated and with obscure thimble punctures. Length, 1.85 mm. Short and stout.

♂. About the same.

Described from many specimens of both sexes mounted together on four cards. Specimens reared from galls on *Casuarina*, sp.

*Hab.*—South Australia: Adelaide (R. L. Barringer).

*Type.*—I. 1337, South Australian Museum. The above specimens and a slide bearing head, posterior and cephalic legs.

### PTEROMALIDÆ.

### PACHYNEURINI.

#### PACHYNEURONELLA, new gen.

♀. Like *Pachyneuron*, Walker, but the antennæ only 11-jointed with two ring-joints, the funicle 4-jointed; abdominal petiole extraordinarily short, so that the abdomen appears sessile; flagellum short and clavate, the funicle-joints transverse; scutellum without a cross furrow, the propodeum very short, without noticeable carinæ nor sulci. Mandibles tridentate but the third tooth broadly truncate, its margin concaved so that four teeth are nearly evident. Third club-joint very short. Marginal vein thickened, about twice longer than wide at apex, the postmarginal a mere spur, the stigmal also very short, merely a minute knob on a very short petiole, not half the length of the marginal, which widens distad. Abdomen convexed beneath near base, as long as the thorax, conic-ovate. Posterior tibiæ with one spur.

♂. Not known.

*Type.*—The following species.

#### PACHYNEURONELLA VIRIDIS, new sp.

♀. Dark metallic-green, the abdomen very dark; wings hyaline, the venation dusky; legs concolorous, tibiæ dusky, the tarsi whitish. Body with very fine velvety sheening as in the eulophid genus *Tetrastichus*. Pedicel short but longer than any of the funicle-joints; proximal club-joint equal to half the club. Length, 1.25 mm.

♂. Not known.

*Hab.*—South Australia: Adelaide. Reared from galls on *Casuarina*, sp. (R. L. Barringer).

*Type.*—I. 1338, South Australian Museum. Two female specimens and a slide bearing posterior legs, head, and antenna.

## SPHEGIGASTERINI.

## PTEROSEMOIDEA, new gen.

♀. Agreeing with *Pterosema*, Foerster, but the antennæ with 3 ring-joints; propodeum long, with an obscure, obtuse, median carina at base only, the neck distinct. Postmarginal vein long, nearly as long as the marginal, which is a third longer than the well-developed stigmal. Abdominal petiole short but distinct; funicle-joints longer than wide. At least one mandible 4-dentate. Differs from *Pterosemella* in lacking the median carina on the propodeum; the lateral carinæ are complete. Third segment of abdomen only half the length of the second, the abdomen acutely convexed beneath at middle.

♂. Not known.

*Type*.—The following species.

## PTEROSEMOIDEA FLAVIPES, new sp.

♀. Metallic grass-green, the abdomen darker; punctate, including the propodeum. Scape and legs, except tarsi, brownish-yellow; rest of antennæ dusky-yellowish. Wings hyaline. Scape long and slender; pedicel somewhat shorter than first funicle-joint, which is subequal to the next two joints, the distal joint only slightly wider than long; club 3-jointed, ovate, somewhat longer than the funicle. Length, 1.60 mm.

♂. Not known.

*Hab*.—South Australia: Port Lincoln (A. M. Lea).

*Type*.—I. 1339, South Australian Museum. One specimen on a card and a slide bearing head, antennæ, and a posterior leg in fragments.

## APTEROSEMOIDEA, new gen.

*Type*.—The following species.

## APTEROSEMOIDEA NIGRIVIRIDIS, new sp.

♀. Nearly black, the abdomen very dark metallic-bluish; coxæ and most of femora concolorous, the rest of the legs yellowish; wings hyaline; scape dark-fuscous, the flagellum black. Mandibles 3- and 4-dentate; propodeum with very obscure lateral carinæ but no median, long, punctate; abdomen depressed, its upper-surface subconvex, segments two and three long, subequal, both together occupying over half the surface, the following segments a third shorter and more or less equal. Coarsely punctate, including the propodeum, the abdomen smooth and shining, its petiole nearly as long as the posterior coxæ. Propodeal spiracle minute, round. Funicle-joints all somewhat longer than wide. Length, 1.35 mm.

♂. Not known.

*Hab.*—New South Wales: Mittagong (A. M. Lea).

*Type.*—I. 1340, South Australian Museum. One specimen and a slide bearing head and posterior legs.

This genus differs from *Pterosemoidea* in abdominal characters, the abdomen being flat or depressed, not convexed beneath nor sunken above, the second and third segments long and subequal, together occupying over a half of the surface; the neck of the propodeum is much less distinct here also.

#### APTEROSEMOIDELLA, new gen.

*Type.*—The following species.

##### APTEROSEMOIDELLA BIOCULATA, new sp.

♀. Dark metallic æneous-green, the abdomen darker; legs concolorous, the tibiæ brown, the tarsi paler. Antennæ brownish, the third ring-joint largest, the first funicle-joint slightly longer than the pedicel; 13-jointed. Stigmal vein long and slender, but not as long as the postmarginal, the forewings obscurely infuscated and with two distinct fuscous spots, the distal one round and just under the knob of the stigmal vein, the proximal one larger, crescentic, and originating from the base of the marginal vein. Abdominal petiole very short but distinct, the second segment longest, only slightly longer than the third, both together distinctly not any longer than a third the length of the abdomen. Both mandibles 4-dentate; cephalic margin of clypeus bidentate. Median carina apparently absent. Length, 1.80 mm.

From one specimen, similarly magnified.

♂. Not known.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1341, South Australian Museum. One specimen on a slide.

The genus differs from *Pterosemoidea* and *Apteroosemoidea* in abdominal, mandibular, and wing characters; the abdomen is slightly convexed beneath, the second and third segments together not occupying over a third of the surface; the mandibles are both 4-dentate and the forewings are infuscated and with a long stigmal vein.

#### ASAPHINI.

##### ASAPHOMORPHELLA, new gen.

♀. Agreeing somewhat with *Aphobetoideus*, Ashmead, but the antennæ only 8-jointed, the club solid, no ring-joint but the first funicle-joint transverse, only half the length of the second; posterior tibial spur very long and stout; mandibles

tridentate; propodeum very short, transverse but medially produced broadly beyond the insertion of the hind coxæ, as in *Lelaps*; abdomen short, ovate, its petiole short and stout, the second segment occupying three-fourths of the surface, the ovipositor strong, exerted for over half the length of the abdomen; posterior femora swollen from both sides; wings fasciate, the marginal vein a little over twice the length of the stigmal, which is a third longer than the postmarginal. No carinæ on metathorax. Club large, ovate, the funicle-joints wider than long.

♂. Unknown.

*Type*.—The following species.

*ASAPHOMORPHELLA ROUSSEAU*, new sp.

♀. Honey-yellow, the distal two-thirds of abdomen and middle of posterior tibiæ dusky or fuscous; scape concolorous, the flagellum dark, the club black. Forewing with a large sub-spherical smoky area across it from the stigmal vein and a transverse smoky stripe at the bend of the submarginal vein, where there is also a dense clump of black bristles; space between the two stripes nonciliate or nearly. Club subequal to the combined lengths of the three preceding joints. Length, 1.70 mm.

*Hab*.—South Australia: Port Lincoln (A. M. Lea).

*Type*.—I. 1342, South Australian Museum. One specimen on a slide.

Respectfully dedicated to Jean Jacques Rosseau for his extract from the "Project of Perpetual Peace," by the Abbé Saint-Pierre.

SPHEGIGASTERINI.

*EURYDINOTELLA*, new gen.

♀. Like *Eurydinota*, Foerster, but the antennæ with three ring-joints, the joints of the funicle all longer than wide, the second longest, the first somewhat shorter than the pedicel. Propodeum without a median carina, with a distinct neck and lateral carinæ. Mandibles 3- and 4-dentate. Abdomen with the caudal margin of the second segment straight, that segment occupying over a third of the surface and subequal to the long third segment. Head and thorax densely punctate, including the propodeum, which is moderately broad. Postmarginal vein slightly longer than the stigmal. Wings hyaline. Parapsidal furrows nearly half complete. Petiole of abdomen nearly as long as the posterior coxæ.

♂. Not known.

*Type*.—The species described herewith.

## EURYDINOTELLA PRIMA, new sp.

♀. Dark metallic æneous-green, the legs (including coxæ) reddish-brown, the tarsi pallid; abdomen darker, smooth. Scape and pedicel fuscous, the former paler proximad, the flagellum black. Ring-joints increasing in size distad; joints two to four of funicle subequal, longest, the distal and proximal joints subequal in length. Distal club-joint ending in a small nipple. Length, 1.75 mm.

*Hab.*—South Australia: Murray Bridge (A. M. Lea).

*Type.*—I. 1343, South Australian Museum. One specimen and a slide bearing head and posterior legs.

## MISCOGASTERIDÆ.

## SYSTASIS, Walker.

## SYSTASIS HENRICI, new sp.

♀. Dark metallic æneous-green, reticulately punctate, the thorax also with obscure thimble punctures. Wings hyaline. Legs brownish-yellow, the cephalic femora washed with metallic-green, the posterior femora darker at the middle and submetallic; antennæ dusky-black, 12-jointed, with two ring-joints, the club 3-jointed, the funicle-joints subquadrate, the first longest, slightly shorter than the pedicel; postmarginal vein somewhat longer than the stigmal. Mandibles 5-dentate, the three inner teeth minute. Propodeum tricarinate, the scutellum without a cross furrow. Ovipositor not exerted. Length, 2.10 mm.

♂. Not known.

*Hab.*—King Island (A. M. Lea).

*Type.*—I. 1344, South Australian Museum. One specimen and a slide bearing head and posterior legs.

Respectfully dedicated to Henri the Fourth of France, King of Navarre, who originated the idea of perpetual peace among nations.

## PTEROMALIDÆ.

## ROPTROCERINI.

## URIELLOIDES, new gen.

♀. Agreeing with *Uriella*, Ashmead, but the antennæ with three ring-joints, mandibles 3- and 4-dentate, in the former the third tooth with a concave margin, the propodeum tricarinate, the lateral carinæ grooved interiorly; spiracle small, oval. Postmarginal vein slightly longer than the stigmal. No spiracular sulcus. Parapsidal furrows incomplete. Somewhat like *Neocatolaccus*, Ashmead. Antennæ inserted close together.

♂. Not known.

*Type*.—The following species

URIELLOIDES FULVIPES, new sp

♀. Dark metallic blue-green, the legs (except coxæ) lemon-yellow, the wings hyaline; scape pallid, suffused with dusky, the flagellum reddish-brown, subclavate, the first three funicle-joints subquadrate and subequal, distinctly shorter than the pedicel, the others widening and shortening slightly. Club 3-jointed. Scape long, cylindrical. Punctate, the propodeum practically smooth. Length, 2 mm

♂. Unknown.

*Hab*.—Queensland: Cairns (A. M. Lea).

*Type*.—I. 1345, South Australian Museum. Two specimens and a slide bearing head and legs.

PARURIELLA, new gen.

♀. Like *Uriella*, Ashmead, but both mandibles tridentate, the lateral carinæ distinct, also the median, the tibial spur of posterior legs long and slender. Antennæ 12-jointed, two ring-, three club-, and five funicle-joints, the latter all subquadrate. Forewings hyaline, the postmarginal vein longer than the stigmal, the latter being less than half the length of the marginal. Pedicel only slightly longer than the first funicle-joint. Scutellum simple. Parapsidal furrows complete. Abdomen only slightly longer than the thorax, subcarinate beneath, depressed.

♂. Not known.

*Type*.—The following species

PARURIELLA AUSTRALIENSIS, new sp.

♀. Bright metallic æneous-green, the coxæ, femora, and tibiæ concolorous, the knees, tips of tibiæ, and the tarsi brown-yellow; venation dark-brown. Antennæ black. Densely punctate, including the propodeum; the abdomen scaly. Cephalic tibiæ sometimes paler. Length, 2 mm.

*Hab*.—New South Wales: Mittagong (A. M. Lea).

*Type*.—I. 1346, South Australian Museum. One of four specimens and a slide with the head, legs, and a forewing.

EUNOTINÆ.

AMUSCIDEA, new gen.

♀. Like *Muscidea*, Motschulsky, but the antennæ 11-jointed with one very small ring-joint; this also distinguishes it from all genera of its tribe; club 3-jointed. Mandibles

tridentate. Parapsidal furrows complete, the scutum with thimble punctures; scutellum longer than usual and with a transverse suture before tip; metathorax and propodeum very short, without carinæ, excepting what appears to be a weak paired median one, the latero-caudal angles longer and obtusely pointed; no sulci. Abdomen ovate, as long as the thorax, carinated beneath. Head somewhat wider than long. Marginal vein short, about twice the length of the moderate stigmal, which is somewhat longer than the postmarginal or else subequal to it. Second abdominal segment about a third the length of the abdomen.

♂. Not known.

*Type*.—The following species.

#### AMUSCIDEA NIGRIPES, new sp.

♀. Dark metallic-greenish, with æneous tinges; four proximal tarsal joints yellowish-white. Wings hyaline; venation dusky, the submarginal vein interrupted just before uniting with the marginal. Antennæ nearly black. Tip of scutellum bluish. Polygonally reticulated or scaly. Funicle-joints all longer than wide, but the first scarcely shorter than the short pedicel; club wider. Tibial spur of posterior legs longer than the proximal tarsal joint, which, however, is not very long, only moderate for a tarsal joint. Scape longer than the club. Teeth of mandibles about equal, distinct. Length, 1.50 mm.

*Hab*.—Queensland: Mount Tambourine (A. M. Lea).

*Type*.—I. 1347, South Australian Museum. One specimen on a card and the head and posterior legs on a slide.

### TETRASTICHINI.

#### TETRASTICHELLA, new gen.

♀. Resembling closely *Tetrastichus*, Haliday, but there are three ring-joints and only two club-joints, the antennæ 10-jointed. Forewings infuscated, the postmarginal vein distinctly present but not half the length of the stigmal. Mandibles tridentate.

♂. Not known.

*Type*.—The following species.

#### TETRASTICHELLA FUSCIPENNIS, new sp.

♀. Metallic-green, bluish ventrad and along sides of abdomen; the legs bluish, the coxæ pale at base, the femora beneath; the tarsi pale. Antennæ dusky. With the usual sculpture of species of *Tetrastichus*. Scutum laterad and caudad narrowly margined with yellow; also the scutellum

and the base of each axilla more broadly; a yellow spot in each parapside at base. Forewings infuscated from base of marginal vein distad about three-fourths the distance from apex of stigmal to apex of blade, the area nearly as wide as the wing under the venation, but narrowing distad, conical. Oral area yellowish. Pedicel longer than any of the funicle-joints, of which the second is largest, ovate, the third wider than long. Club without a nipple. Length, 1.50 mm

*Hab.*—South Australia: Murray Bridge (A. M. Lea).

*Type.*—I. 1348, South Australian Museum. One specimen on a slide.

## OMPHALINI.

### ACHRYSOCHARELLOIDEA, new gen.

♀. Like *Gyrolasella*, Girault, but the club of the antennæ 4-jointed, the fourth joint minute, itself terminating in a seta. Parapsidal furrows complete; postmarginal vein longer than the slender stigmal. Scutellum with two grooved lines. Teeth of mandible minute. Antennæ 10-jointed with two ring-joints.

♂. Not known.

*Type.*—The following species.

### ACHRYSOCHARELLOIDEA PAX, new sp.

♀. Metallic-green and punctate, the wings hyaline; legs pale-yellow, excepting the coxæ and proximal third or more of the femora; scape pale-yellow at proximal third, the antennæ otherwise black. Pedicel smallest of the flagellum, the two funicle-joints largest, the three proximal club-joints large, a little wider than long. Length, 1.25 mm.

*Hab.*—New South Wales: Sydney (A. M. Lea).

*Type.*—I. 1349, South Australian Museum. One specimen on a slide.

Dedicated to the cause of international peace.

### RHICNOPELTELLA, Girault.

#### RHICNOPELTELLA RETICULATA, Girault.

♂. The same as the female; antennæ with four ring-joints, the two joints of the funicle both transverse; pedicel as long as the funicle. Antennæ dusky-yellowish. Length, 0.75 mm.

#### RHICNOPELTELLA FILIA, new sp.

♀. Closest to *splendoriferella*, but dark blue-green, the wings hyaline, the antennæ concolorous with the body; cephalic tibiae, the knees and tarsi pallid-dusky. Distal



funicle-joint not more than half the length of the pedicel. Length, 1.75 mm.

♂. Not known.

*Hab.*—New South Wales: Mount Kosciusko (B. Ingleby).

*Type.*—I. 1467, South Australian Museum. One specimen and a slide bearing portion of a leg, a forewing, and the antennæ.

#### ACHRYSOCHARIS, Girault.

##### ACHRYSOCHARIS LEIBNITZI, new sp.

♀. Like *saintpierrei*, but at once distinguished because the antennæ are not compressed fusiform and bear a ring-joint, the legs are white except the blackish coxæ, and the wings are unifasciate, the fascia only about half complete (from the stigmal knob). Pedicel longer than any of the following joints, those of the funicle ovate. Antennæ black. Mandibles tridentate. Length, 0.85 mm.

♂. Unknown.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1468, South Australian Museum. One specimen on a slide.

#### CHALCEDECTINÆ.

##### AMOTURELLA, new gen.

♀. Agreeing in general with *Amotura*, Cameron, but the antennæ only 8-jointed, the club solid, one ring-joint, the posterior femora swollen but only very minutely serrate (not denticulate) beneath. Body short, pteromaliform, the cephalic femora swollen and with one minute tooth beneath. Pronotum long, rectangular (as in the *Eurytomidæ*, but not as wide as the thorax), nearly as long as the scutum, which has complete, punctate, parapsidal furrows. Propodeum very coarsely punctate. Second abdominal segment very long, occupying two-thirds the surface, the following segments very short and subequal; abdomen sessile, broadly ovate, convex beneath, the ovipositor not exerted. Scutellum with a punctate cross-furrow just before tip. Both wings infuscated, the stigmal vein short, without a knob, the postmarginal still shorter. Mandibles tridentate, the head triangular, the antennæ inserted on the clypeus.

♂. Not known.

*Type.*—The following species.

##### AMOTURELLA SAINTPIERREI, new sp.

♀. Metallic-coppery, the abdomen black, the sides of thorax green; legs rich, dark reddish-brown; posterior wings uniformly stained, the forewings stained out to the end of the

venation, from thence hyaline, apparently without marginal fringes. Thorax scaly, also the head. Scape slender; pedicel long obconic, twice the length of the first funicle-joint, which is somewhat wider than long, largest of the funicle, the ring-joint closely attached to it and as wide as its base; other funicle-joints shortening; club as long as the funicle. Length, 1.25 mm.

*Hab.*—Tasmania: Hobart (A. M. Lea).

*Type.*—I. 1469, South Australian Museum. One specimen and a slide bearing head and posterior leg.

Respectfully dedicated to the Abbé de Saint-Pierre.

## ENCYRTIDÆ.

### ECTROMINI.

#### CALOCERINELOIDES, new gen.

♂. Like *Calocerinus*, Howard, but the marginal vein punctiform, the wings hyaline, the axillæ not quite meeting inwardly, the sixth funicle-joint elongate but not much longer than the other five joints, distinctly not twice longer than their united length; funicle-joint five only half the length of the preceding part of the funicle; branches long, subequal, clavate, on funicle-joints two to five. Antennæ 9-jointed, inserted slightly below the middle of the face, the club solid, no ring-joints. Stigmal vein slender, twice the length of the short postmarginal. Second tooth of mandible broadly emarginate.

♀. Not known.

*Type.*—The following species.

#### CALOCERINELOIDES RAMOSA, new sp.

♂. Steel-blue, the abdomen metallic-greenish; head and thorax polygonally shagreened, the abdomen likewise but smoother, the axillæ still smoother, scaly. Legs yellowish-brown; the antennæ dusky-brownish. Club about half the length of the sixth funicle-joint. Length, 1.50 mm.

*Hab.*—South Australia: Murray Bridge (A. M. Lea).

*Type.*—I. 1470, South Australian Museum. One specimen and a slide with the head.

## ANAGYRUS, Howard.

#### ANAGYRUS CHANNINGI, new sp.

♀. Bright metallic blue-green, the wings wholly hyaline; postmarginal vein as long as the stigmal, the marginal a little longer than wide. Legs and tegulæ yellow. Valves of ovipositor black. Head and thorax densely reticulated, the

mesonotum with numerous thimble punctures. Posterior tibiæ with an obscure, roundish spot above near each end. Posterior coxæ concolorous. Antennæ 12-jointed, with one very short ring-joint, the scape compressed distad, joints two and three of funicle longest, subequal to the pedicel, one slightly shorter, six a little wider than long; club wider than funicle, short ovate, 3-jointed; antennæ dark, suffused slightly with brownish. Length, 2.2 mm., excluding the ovipositor, which is exerted for half the length of the abdomen.

♂. Not known.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1471, South Australian Museum. One specimen and a slide with the head.

Respectfully dedicated to William Ellery Channing.

#### ANAGYRUS PENNI, new sp.

♀. Dark metallic-green, the scutellum more or less coppery; wings hyaline, the postmarginal vein distinctly not more than a half the length of the stigmal; legs dark-brown; antennæ as in the other species but the club is more or less distinctly brownish, the scape less compressed distad, the second and third funicle-joints not distinctly longer than wide, a little wider than long, somewhat shorter than the shorter pedicel, the funicle widening distad. Axillæ blue, barely separated. Length, 2 mm., exclusive of ovipositor, which is exerted for a length equal to a fifth that of the abdomen.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1472, South Australian Museum. One specimen and a slide with the head.

Respectfully dedicated to William Penn.

#### ANAGYRUS SAINTPIERREI, new sp.

♀. Differs from the preceding species in that the mandibles have the second tooth acute, not broadly truncate at apex, and it is only a third of the size of the first tooth. Dark metallic-bluish, the head and mesothorax rather bright-green; legs metallic-bluish, the tarsi brown. Wings hyaline, the venation blackish, somewhat as in *penni*. Antennæ the same but the scape hardly at all dilated, the first and second funicle-joints longest, each subequal to the pedicel, longer than wide (distinctly), the following joints more or less subquadrate; antennæ blackish. Length, 2 mm.; ovipositor projecting slightly.

*Hab.*—South Australia: Port Lincoln (A. M. Lea).

*Type.*—I. 1473, South Australian Museum. One specimen on a card and the head on a slide.

## ANAGYRUS EMERSONI, new sp.

♀. Like *penni* in mandibular structure. Bright bluish-green, the scutellum with æneous tinges; legs bright yellowish-brown, the cephalic femur and the middle of cephalic tibia metallic-greenish, the posterior femur dusky proximad. Forewings with a distinct yellowish stain under the stigmal and marginal veins, otherwise hyaline. Antennæ concolorous with the legs, but the scape metallic. Postmarginal vein no longer than half the length of the stigmal, the marginal subpunctiform. Head and thorax with a minute scaly sculpture. Length, 1.50 mm.

*Hab.*—New South Wales: Sydney (A. M. Lea).

*Type.*—I. 1474, South Australian Museum. One specimen and a slide with the head.

Respectfully dedicated to R. W. Emerson for his essay on "War."

## MIRINI.

## PSEUDENCYRTELLA, new gen.

*Type.*—The following species.

## PSEUDENCYRTELLA FASCIATA, new sp.

♀. Dark metallic-purplish, the legs concolorous, the tarsi yellowish; forewings with a fuscous stripe across them from the stigmal vein; antennæ concolorous. Mesoscutum with fine scaly sculpture and dense pin punctures; the scutellum finer, with longitudinal lining, the axillæ meeting inwardly. Antennæ inserted near the clypeus, filiform, the scape very long, extending far above the clypeus and more than half the length of the long slender flagellum, whose joints are all more than twice their width; pedicel about two and three-quarter times longer than wide at apex, shorter than the first funicle-joint; club not enlarged, 2-jointed, the funicle 7-jointed, no ring-joint. Head (cephalic aspect) narrow, longer than wide. Marginal vein scarcely longer than wide, the postmarginal shorter than the stigmal. Mandibles with the three teeth about equal. Length, 2 mm.

♂. Not known.

*Hab.*—Tasmania: Scottsdale (A. M. Lea).

*Type.*—I. 1475, South Australian Museum. One specimen and a slide bearing posterior leg and antenna.

The genus differs from *Pseudencyrtus*, Ashmead, in having the elongate scape, the narrow head, the 2-jointed club, and the punctate scutum.

## EURYTOMINÆ.

## EURYTOMA, Illiger.

## EURYTOMA MAZZINII, new sp.

♀. Robust. Black, the head and thorax with short, greyish pubescence; abdomen ventro-meso-proximad brownish; coxæ and femora concolorous, tibiæ and tarsi reddish-brown, also the knees, most of the distal half of intermediate femora and all of the scape. Antennæ black, 11-jointed, the club 3-jointed, one ring-joint; joint one of funicle longest; ring-joint yellow. Wings hyaline, the postmarginal vein nearly as long as the marginal, slightly longer than the stigmal. Length, 1.80 mm.

♂. Not known.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1350, South Australian Museum. One specimen on a card and a slide with posterior femur and antenna.

Dedicated to Giuseppe Mazzini for his "The Duties of Man."

## EURYSYSTOLE, new gen.

♀. Agreeing with *Systole*, Walker, but the abdominal segments not subequal, the fourth over thrice the length of the third, longer than wide, very long, occupying more than a half of the surface. The thorax is scaly, and with scattered, shallow punctures as in *Systole opus*. Posterior tibiæ with only one spur. Parapsidal furrows complete.

♂. Not known.

*Type.*—The species following.

## EURYSYSTOLE VULGARIS, new sp.

♀. Black, the wings hyaline, the venation very pallid-yellow, the postmarginal vein somewhat shorter than the stigmal; antennæ pale-yellow, the pedicel dusky; legs honey-yellow. Eleven antennal joints, one ring-joint, the first funicle-joint subequal to the pedicel, only slightly longer than wide, the others subequal to it or a little shorter; club 3-jointed, larger, obliquely truncate. Pronotum with a more or less obscure yellowish spot in the lateral aspect, cephalo-ventrad. Third and following abdominal segments more or less distinctly scaly. Cephalic ocellus not within the scrobicular cavity. Knees, tips of tibiæ, and tarsi white. Length, 1.45 mm.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1351, South Australian Museum. One specimen and a slide with posterior leg and antennæ.

## SYSTOLE, Walker.

## SYSTOLE OPUS, new sp.

♀. Black, the wings hyaline, the antennæ concolorous, also the coxæ and most of all femora, the tibiæ and tarsi yellowish-brown; second and third abdominal segments smooth, the next segments scaly, the fourth (which is equal to the preceding) only along proximal half; head and thorax scaly, but there are large, shallow punctures scattered over the surface resembling pustules. Wings hyaline, the postmarginal vein slightly shorter than the others, which are subequal. Antennæ 11-jointed, the 3-jointed club obliquely truncate from apex of first joint, the pedicel longer than the first funicle-joint, all joints of the latter about cupshaped and subequal; one ring-joint. Posterior tibiæ with two spurs. Parapsidal furrows complete. Length, 1.10 mm.

♂. Not known.

*Hab.*—Queensland: Cairns (A. M. Lea).

*Type.*—I. 1353, South Australian Museum. One specimen and a slide bearing posterior leg and antenna.

## EUCHARIDÆ.

## CHALCUROIDES, new gen.

♂. Agreeing with *Chalcurella*, Girault, but the scutellum terminating in a minute, upturned, spinelike plate, nearly as in *Astilbula*, and the antennæ bear paired branches after the fifth funicle-joint, the first five funicle-joints with single branches from opposite sides alternately. Joints two to five short, joint one as long as a third or more of the long club, the funicle-joints lengthening after the fifth; pedicel very short. Mandibles with one and two teeth within respectively.

♀. Not known.

*Type.*—The following species.

## CHALCUROIDES VERSICOLOR, new sp.

♂. Metallic-green, the axillæ and rest of thorax distad of them, purple, the abdomen blue, the long petiole greenish and roughened like the thorax; face bluish about the antennæ, striate; antennæ black (submetallic); wings hyaline, the venation brown. Legs dark, submetallic, the knees, tips of tibiæ, and tarsi brownish. Length, 3.85 mm.

Described from one male mounted on a card with its host, a "bulldog" ant (a species of *Myrmecia*), and labelled "Parasitic on pupa."

*Hab.*—Queensland: Townsville (F. P. Dodd).

*Type.*—I. 1352, South Australian Museum. The above specimen and a slide bearing the head.

ON THREE SPECIES OF ISOPOD CRUSTACEA FOUND IN  
THE NESTS OF ANTS IN SOUTH AUSTRALIA.

By W. H. BAKER, F.L.S.

[Read May 8, 1913.]

PLATES II. AND III.

In 1894 Wasmann—*Kritisches verzeichniss de myrmekophilen und termitophilen arthropoden*, Berlin, 1894—enumerated nine species of Oniscoidea found in association with ants in their nests. The list is as follows:—

1. *Metoponorthus myrmecophilus*, Stein, Dalmatia.
2. *Platyarthrus hoffmanseggii*, Brandt, Europe.
3. „ *schhöbli*, Budde-Lund, Canary Islands.
4. „ *caudatus*, Aub. et Dollfus, Europe.
5. „ *simoni*, Dollfus.
6. *Lucasius (Porcellio) pallidus*, S. France.
7. „ *hirtus*, Aub. et Dollfus, Marseilles.
8. „ *myrmecophilus*, Luc.
9. *Leptotrichus inquilinus*, Klbl., Somali Coast.

To these must be added—

10. *Trichoniscus commensalis*, Chilton, New Zealand.

Of the three species here described the first two have been found together in the nests of *Camponotus nigriceps* in several parts of this State, and the first also with *Myrmecia forficata*. I am of opinion that these will be recorded from nests of other species of ants. That they are true *Myrmecophiles* there seems to be no doubt. The third is from a termite's nest, and may probably also be found with ants; it is a very minute species of about 2 mm. long, and consequently very difficult to handle.

I am indebted to Mr. A. M. Lea, of the South Australian Museum, for many specimens; also for the names of the ants.

ISOPODA.

Tribe, ONISCOIDEA.

Family, ONISCIDÆ.

Genus, ONISCUS, Linn.

ONISCUS MYRMECOPHILUS, n. sp. Plate ii., figs. 1-10.

The body is little convex, with minute scale-like hairs, which are not crowded.

The head is rather rough, about three times broader than long; it projects a little medianly, being declivous anteriorly;

the antero-lateral lobes are moderately developed, and project obliquely. The face (epistome or clypeus) is convex. The eyes are small, of about 7 or 8 ocelli. The segments of the thorax have their epimera laterally expanded and distinctly marked; the first segment has its antero-lateral angles reaching to the lateral lobes of the head, the posterior angles of the following segments project behind in increasing degree backwards. The *abdomen* is short, with the lateral parts of segments 3, 4, and 5 projecting much behind, those of the 5th reaching nearly to the level of the end of the 6th segment, this is very acute, a good deal broader than long, triangulate, narrowing rather abruptly, with sides incurved, reaching a little beyond the peduncle of the uropods. The antennules are very small, 3-jointed, the middle joint shortest, the distal one with a short setum. The antennæ are finely setose, the flagellum is rather slender, composed of three joints, the middle one shorter than the proximal, the distal being equal in length to the 1st and 2nd taken together, it ends in a setum; the whole flagellum is slightly longer than the 5th peduncular joint. The mandibles are strong; in the left one the incisory process is 4-toothed, the secondary plate is bifid, and following it is a pad of setæ with a small penicil close to it and a longer one somewhat further away in the proximal direction. The right mandible also has a secondary plate, which is feebly chitinized. The first pair of *legs* are partially prehensile, as the propodus is slender and slightly curved; the three preceding joints are robust, and bear numerous stiff barbed setæ. The remaining legs have rather slender propodi and dactyli. In the female only the exopod of the first pleopod is lobed, and that only slightly; the margins bear few small setæ. The peduncles of the uropods are short, and the inner rami are articulated quite near the outer; the outer are stiliform, with slight grooves on the outer sides, a little compressed in the dorso-ventral direction. The inner rami are slightly compressed, in the lateral direction they reach to about half the length of the outer.

The colour is pale-slate, with the usual lighter markings on the dorsal surface.

Family, ARMADILLIDIDÆ.

Genus, CUBARIS, Brandt.

CUBARIS COMMENSALIS, n. sp. Plate iii.

The body is strongly convex, with the pleural portions of each segment of the thorax projecting downwards and a little outwards at the extremities; covered with laterally compressed tubercles, which are mostly regular in longitudinal and transverse series, thus each thoracic segment except the first



carries usually two transverse rows, the posterior row in each case projecting slightly beyond the posterior margin of each segment. Besides the tubercles the surface is minutely granulate.

The *head* is about three times as broad as long, with smaller tubercles arranging themselves in four more or less regular transverse rows. The anterior ridge is arcuate, strongly marked, and complete. The face is slightly excavate below the ridge and again deeper, providing recesses for the antennæ. The eyes are very small, with few ocelli—two or three—which are rather separate and at the base of a small tubercle. The first segment of the thorax has more than two transverse rows of tubercles, but the more anterior ones are irregular and more conical in shape; the lateral margin of this segment is slightly turned up, posteriorly this margin has a well-defined notch, but is not grooved for any distance along the margin. The epimera of the succeeding segments are slightly excavated and free from tubercles below. The first two segments of the *abdomen* are without tubercles—the second has faint tubercles in some specimens—but each of the three following has a single transverse row which projects behind, also the terminal segment has two large tubercles, each sometimes obscurely divided into two, and outward from these there is one on each side obscuring the margin; the end is slightly excavate. The antennules are very minute and obscurely jointed. The antennæ are small and short, with the two jointed flagellum much shorter than the fifth peduncular joint; this is about as long as the two joints which precede it taken together; the flagellum also is much narrower than the peduncle, its proximal joint being short. The labrum is well defined and prominent. The mandibles are normal and rather short. The *legs* are robust, with the joints rather sparsely spined, the propodi are short and tapering, the dactyli small; there are no dactylar setæ. The exopods of the pleopods are provided with respiratory lobes which project laterally but are not much thickened. The outer rami of the uropods are very minute; each terminates in a small setum. The inner rami are larger, but still very short.

Several specimens have been examined; in some the body is more ovate and the epimera more spreading; the tubercles also vary in size and definiteness. In some the antennæ are longer and slenderer.

The colour varies from light-slate to brownish-white.

CUBARIS MINUTA, n. sp. Plate ii., figs. 11-16.

The body is rather loosely compacted, covered with large laterally compressed tubercles, for the most part arranged in

regular transverse lines; though not so numerous they are larger proportionately than in the preceding species.

The *head* bears smaller and more rounded tubercles than in the same species, the eyes are very small, the ocelli (two or three) seem to be confluent. The face is slightly excavated above, with the upper arcuate margin not very distinct and slightly indented in the middle, with the external angles definite, sculptured to accommodate the antennæ, the cavities thus formed separated by a median ridge. The first segment of the thorax is the longest; its posterior angles are not deeply cleft, the cleft visible from the outside; the remainder of the lateral margin is a rather thin edge. The following segments each become a little longer from before backwards. The first *abdominal* segment is short, the second has two transverse tubercles, the third, fourth, and fifth are strongly tuberculate; these segments do not project much at their lateral extremities. The sixth segment is about twice as wide as long, convex, curved under the body; it bears two transverse tubercles. Antennules are present, but are very small. The antennæ are short, the peduncular joints much thickened in contrast to the small 2-jointed flagella, the proximal joints of which are very short.

The mandibles are strong, the left one with three penicils, the right one with two. The *legs* are moderately robust and sparsely spined. The external rami of the uropods are wanting, the inner rami do not reach the end of the *abdomen*, the peduncles are 5-sided as seen from below.

The colour is white, with pale-brown markings.

The length is about 2 mm.

## DESCRIPTION OF PLATES.

### PLATE II.

- |          |   |
|----------|---|
| Fig. 1.— | <i>Oniscus myrmecophilus</i> , n. sp., 4 diameters.       |
| 2.—      | antenna.  |
| 3.—      | portion of left mandible, distorted.                      |
| 4.—      | 1st maxilla.  |
| 5.—      | 2nd maxilla.  |
| 6.—      | maxilliped.   |
| 7.—      | last segment of abdomen, etc.                             |
| 8.—      | uropod from below.  |
| 9.—      | 1st pleopod, male.  |
| 10.—     | 2nd pleopod, male.  |
| 11.—     | <i>Cubaris minuta</i> , n. sp., 15 diameters.             |
| 12.—     | face with antenna.  |
| 13.—     | lateral margins of 1st two segments of thorax from below. |
| 14.—     | 1st leg.  |
| 15.—     | abdomen from behind.                                      |
| 16.—     | uropods from below.                                       |

## PLATE III.

Fig. 1.—*Cubaris commensalis*, n. sp., 5 diameters.

”	2.—	”	”	”	”
”	3.—	”	”	1st maxilla.	”
”	4.—	”	”	maxilliped.	
”	5.—	”	”	face with antenna and lateral margin of 1st two segments of thorax.	
”	6.—	”	”	last segment of abdomen, etc., from above.	
”	7.—	”	”	last segment of abdomen, etc., from below.	
”	8.—	”	”	6th leg.	
”	9.—	”	”	1st pleopod of male.	
”	10.—	”	”	2nd pleopod of male.	
”	11.—	”	”	3rd pleopod of male.	
”	12.—	”	”	4th pleopod of male.	

ADDITIONS TO THE FLORA OF SOUTH AUSTRALIA.<sup>(1)</sup>  
No. 7.

By J. M. BLACK.

[Read June 12, 1913.]

PLATES IV. AND V.

*An asterisk denotes an alien plant more or less naturalized.*

MALVACEÆ.—*Hibiscus Trionum*, L. ("Bladder Hibiscus"). Orchards near Smithfield (F. R. Zietz). A garden escape.—Mediterranean region, Asia and Central Australia.

OXALIDACEÆ.—\**Oxalis flava*, L. Growing in large clumps between Henley Beach and the Port River (H. H. D. Griffith). A yellow-flowered species with digitate leaves, flowering here April-May.—South Africa.

LEGUMINOSÆ.—*Swainsona Oliveri*, F. v. M., in Melb. Chem., new ser., ii., 84. Professor Ewart, Government Botanist of Victoria, informs me that Mueller's original description of the colour of the flowers was: "The petals blue towards summit when dry." Tate (Fl. S.A., 68) says: "Petals blue," and Moore (Fl. N.S.W., 151) says: "Flowers bluish." The dried specimens brought from Tarcoola in 1912 by J. W. Mellor showed the flowers as light-yellow. I was fortunate enough to grow two plants in my garden from seed, and it then appeared that the natural colour of the standard is pale-yellow, while the keel is white with a pink tip. The flower contained no shade of blue, and the standard remained folded during flowering. The curved style has a small tuft of hairs behind the stigma; that is, on the lower side of the style (as in *S. microphylla*, Gray), the upper or inner side being almost glabrous. The narrow, rigid pod of my cultivated plants hung downwards by the slender peduncle when ripe, and penetrated the ground by means of its sharp beak, which is simply the straight, persistent part of the style. In the soft garden soil the pod was buried for half its length, so that this is doubtless a natural method of depositing the seeds safely in the earth.

(1) Papers of a similar character have been published in previous volumes of the Transactions, as follows:—No. 1, vol. xxxiii., 223; No. 2, vol. xxxv., 2; No. 3, vol. xxxv., 60; No. 4, vol. xxxvi., 21; No. 5, vol. xxxvi., 171; No. 6, vol. xxxvii.

**COMPOSITÆ.**—**Helichrysum Mellorianum**, sp. nova. Herba parva annua lanato-tomentosa (involucris exceptis), foliis linearibus marginibus revolutis, supremis lanceolatis, capitulis stipitatis 7-10 in glomerulum terminalem aggregatis, bracteis scariosis flavis appressis longe ciliatis, interioribus unguiculatis, floribus fœmineis marginalibus 8-12, bisexualibus 30-35, achæniis oblongis glabris, pappi setâ solitariâ ascendenti superne plumosâ-penicillatâ.

Gawler Ranges, Eyre Peninsula (S. A. White, September, 1912). The species is dedicated to Mrs. J. F. Mellor, of Fulham, and Mr. J. W. Mellor, who have both made valuable botanical collections. This little plant, with beautiful golden flowerheads, belongs to the section *Chrysocephalum*, but the heads are more densely clustered than in the other species of that section, and the single pappus bristle is peculiar. (Plate iv.)

**Angianthus Whitei**, sp. nova. Planta ramosa, ramulis tenuibus rigidis glabratiss, foliis angusto-linearibus sublanatis, capitulo generali globoso laxè lanato, ejus bracteis numerosis linearibus vel cuneatis mediane herbaceis infra late scarioso-marginatis flores superantibus, receptaculo cylindraceo, capitulis partialibus 1-2-floris, bracteis sæpius 7, 4 exterioribus (cum unâ subtendente) scariosis concavis mediane rigidis plus minus lanato-ciliatis, 2 interioribus planis flores involventibus, pappo minuto subplumoso caduco, setis 8-12 flexuosis, barbellis distantibus instructis, basi in anulum coalitis.

"Corunna" Station, Eyre Peninsula, August, 1912. Named after the collector, Captain S. A. White. It is probably a small, slender annual, but the specimens show no roots. In pappus it is perhaps nearer to *Calocephalus*, but in other respects it appears to belong to *Angianthus*. (Plate iv.)

**Griffithia**, gen. novum. Involucris bractearum pluriseriatis, scariosis; receptaculum nudum; flores tubulosi; antheræ ecaudatæ; styli rami subteretes, truncati; pappi setæ a basi plumosæ; folia opposita.

Named after Mr. H. H. D. Griffith, the discoverer of several new species in South Australia. The flowerheads of the species described below have most of the characteristics of *Helipterum*, but the tail-less anthers and the regularly opposite leaves necessitate the creation of a new genus, whose exact position among the tribes of the Composite family is uncertain.

**G. helipteroides**, sp. nova. Herba annua parvula rigida, caule erecto trichotomo, foliis lineari-lanceolatis basi

connatis, capitulis terminalibus solitariis, involucre campanulato, 6-7 mm. longo, bracteis exterioribus obtusis appressis brunneo-nitidis, interioribus cum laminis brevibus obtusis flavis, floribus circa 15 bisexualibus, achæniis sericeo-villosis, pappi setis 15-20 liberis.

Gawler Ranges, Eyre Peninsula (S. A. White, September, 1912). Unfortunately only one specimen of this small plant, 7 cm. high, came to hand. (Plate v.)

OROBANCHACEÆ.—*Orobanche cernua*, Lœfl., or *O. Australiana*, F. v. Muell. As is well known, our only native species of *Orobanche* was considered by Bentham to be the same as *O. cernua*, Lœfl., a Mediterranean plant. Mueller considered the differences sufficient to justify its being treated as a separate species. Tate has a note on the subject in Proc. Roy. Soc., S.A., vi., 174. Last year I sent to Kew several specimens obtained at Glenelg and Port Noarlunga, along with drawings showing the condition of the fresh flower, and asked for the opinion of the Kew botanists. The reply was: "After a careful examination of the material we do not think that *O. cernua*, var. *Australiana*, Beck (Monograph Orobanchaceæ, p. 144), can be regarded as specifically distinct from *O. cernua*. The sepals of both the variety and the type are several-nerved."

AMARANTACEÆ.—\**Amarantus albus*, L. Fulham (H. H. D. Griffith, January, 1913). A native of North America, where it is known as a "tumble weed," and naturalized in the Mediterranean region. A rather prickly weed.

CONIFERÆ.—*Callitris Drummondii*, Benth. et Hook. Arno Bay, Eyre Peninsula (J. W. Mellor, June, 1911). These specimens have been determined by Mr. J. H. Maiden, Government Botanist of New South Wales, as above. Hitherto this species of Native Pine has only been recorded from Western Australia, as far east as Esperance Bay.

IRIDACEÆ.—\**Synnotia bicolor*, Sweet. Hillsides on road to Waterfall Gully.—South Africa. Closely allied to *Sparaxis*, but the flower is 2-lipped, the upper lip purple and the lower one white and yellow.

GRAMINEÆ.—\**Trisetum pumilum*, Kunth. Gawler Ranges, Eyre Peninsula (S. A. White, September, 1912).—Mediterranean region and South Africa. A dwarf grass resembling small specimens of *Koeleria phleoides*, Pers. This and *Eragrostis minor*, Host, are curious instances of Mediterranean grasses collected in the far interior of our State without having been discovered in the southern districts. \**Lolium rigidum*, Gaud. Adelaide Plains, Glenelg, Brighton, Robe. A stiff

grass, the spikelets appressed and inconspicuous compared with those of *L. temulentum*, L. (Darnel).—Mediterranean region. \**Brachypodium distachyon*, Roem. et S. North Park Lands, Adelaide; Kensington; Roseworthy College; Slape's Gully; Belair.—Mediterranean region.

***Chloris divaricata***, R. Br., var. *nova minor*. Variat a typo spicis paucioribus (4-6) et brevioribus (3-5 cm. longis), floris fertilis aristâ longiore (15-17 mm.).

Oodnadatta (Miss Staer, January, 1913). The localities given for *C. divaricata* by Bentham in Fl. Aust., vii., 612, are Sturt Creek, in tropical Australia, and several places in Queensland. It is mentioned by Max Koch in Trans. Roy. Soc., S.A., xxii., 117 (1898), as growing on "Mount Lyndhurst" run, in the northern part of South Australia, and is one of the plants in his collection identified by Professor Tate, but I have not seen the specimens and do not know whether they are typical, or of the smaller variety here described. (Plate v.)

## DESCRIPTION OF PLATES.

### PLATE IV.

*Helichrysum Mellorianum*, sp. nova.—1, style; 2, anthers; 3, woolly stalk of flowerhead with four of the outermost involucre bracts; 4, bisexual flower; 5, female flower; 6, achene and pappus bristle; 7, involucre bracts.

*Angianthus Whitei*, sp. nova.—1, outer bract of general involucre; 2, two inner bracts of partial involucre and flower; 3, inner bract of general involucre; 4, style and anthers; 5, flower; 6, pappus.

### PLATE V.

*Griffithia helipteroides*, gen. n. et sp. nova.—1, flower; 2, style; 3, anthers; 4, involucre bracts; 5, pappus bristle.

*Chloris divaricata*, R. Br., var. *nova minor*.—1, spikelet; a, barren flower; b, fertile flower.

## ADDITIONS TO SOUTH AUSTRALIAN ORCHIDÆ.

By R. S. ROGERS, M.A., M.D.

[Read July 10, 1913.]

## CALEANA MINOR, Br.

This orchid has been recorded from the three Eastern States and from Tasmania, but not hitherto from South Australia. Although rather widely distributed it is a rare species and appears to be very localized in its occurrence. I have only collected it in one little-known locality in this State, at a place called Kuitpo, near Dashwood's Gully. *Caleana major*, Br., was also found growing in the same spot. The time of blooming is December.

*Description.* — A slender plant from 3 in. to 7 in. high; stem reddish-brown, glabrous; leaf also reddish-brown, very narrow-linear, glabrous, basal. *Flowers* reddish-brown, inverted, single, or in a raceme of from three to six, on fairly long pedicles subtended by small ovate-lanceolate bract. *Sepals.* — Lateral ones about  $\frac{1}{2}$  in. long, linear-lanceolate, free, channelled anteriorly, forming nearly a right angle with the projecting base of the column. Dorsal sepal about the same length as the lateral ones, linear-spathulate, erect or slightly incurved. *Petals* narrow-linear, slightly shorter than sepals, incurved on each side of column, and having a common point of origin with the dorsal sepal. *Labellum* peltate, attached by a rather long, curved, green, sensitive, strap-like stalk to the rectangular projecting base of the column; lamina ovate-lanceolate, with a bluntly divaricate bifid tip, basal margin with short blunt point; upper-surface convex, densely tuberculate except towards its extreme base; lateral margins also tuberculate; under-surface concave, non-tuberculate. *Column* almost as long as sepals, with rectangular projecting base or foot; widely winged with membranes stretching from base of anther to distal end of foot. *Anther* attached at its base to extreme top of column; 2-celled, each cell containing two pollen-masses, tip quite blunt. The *stigma* lies just below the anther. It is represented by an almost circular disc or sucker with free margins, standing out in relief from the front of the column, to which it is attached by the centre of its posterior convex surface. It is slightly concave in front, and in its upper border the rostellum is represented by a short widely triangular tongue of tissue, which projects upwards between the bases of the two anther loculi. There is no



*caudicle* and no connection whatever between rostellum and pollinia.

The widely-winged column forms a kind of sac, which may be completely closed by the labellum. In sunny weather the labellum of the mature flower is conspicuously extruded, but under colder conditions, or when shaken or touched, it undergoes a complete revolution, so as to cause its rough convex surface to fit in between the wings of the column, the bifid apex being in close proximity with the base of the latter, while the broader base of the lamina, with its blunt projecting point, lies over the rostellum. The cavity of the column is in this way completely occluded. The movement is due to a curling inwards of the strap-like claw.

This species is readily distinguished from *Caleana major* by its exceedingly narrow leaf, smaller flowers, and tuberculated labellum. In *major* the surface of the labellum is smooth.

PTEROSTYLIS CYCNOCEPHALA, Fitz.

*Description.* — Plant green, robust, 1 in. to 3 in. high. *Leaves* in a crowded basal rosette, seven to nine in number, petiolate, ovate-lanceolate, 5-nerved. *Stem* usually short and stout, with a bract subtending each flower-stalk, and generally one or two leafy bracts near the base. *Flowers* small, green, in a raceme of two to six flowers, on fairly long pedicels, mostly crowded. *Galea* incurved, blunt, broad, and short (about four lines). *Lateral sepals* shorter than galea, reflexed, connate almost to the tip, together forming a cup-like depression, ovate, tips not prolonged into tails. *Labellum* on short broad claw, rhomboid, with broadly rounded tip, latter slightly emarginate; with a relatively large, conspicuous, dark-green, pyramidal appendage, the apex of which looks towards the tip of the labellum; highly irritable. *Column* slightly incurved, not reaching quite to top of galea; upper angle of membranous wings not toothed, their anterior margins ciliate. *Anther* usually oblique, sometimes almost horizontal, hinged, 2-celled, each cell with two loculi; pollen-masses four, somewhat granular, no caudicle. *Rostellum* triangular, its tip inserted between the two cells of the anther; sticky on anterior surface; its margins gradually incurving towards each other just below the tip until they meet so as to form a split tube, which passes down the anterior surface of the column, penetrates the substance of the stigma, and becomes continuous with the stigmatic canal. *Stigma* occupies about the middle third of the anterior surface of column, ovate-lanceolate with point upwards; bi-lobed, the lobes separated by a longitudinal mesial sulcus over the stigmatic canal; sticky but not markedly so.

This plant is a close ally of *P. mutica*, Br., from which, however, it differs in habit, the latter being a much more slender plant, generally with four or five basal leaves, which are not crowded, and with less crowded flowers. The labellar appendage, a conspicuous feature in the two plants, is quite different in shape and direction in each case. In *P. mutica* it is fleshy, oblong, recurved, looking towards the base of the labellum; in *P. cycnocephala* it is pyramidal and looks towards the tip of the labellum. The claw of the labellum is relatively very long in *P. mutica*, being about the same length as the labellum itself; in the other species it is short. In Fitzgerald's species the stigma is ovate-lanceolate with the point uppermost; in Brown's plant it is narrow-elliptical.

Capsules of seed are produced freely in this plant.

Hitherto it has only been recorded from New South Wales, but last year I received very fine specimens from Victoria. One of these was 7 in. in height and had a raceme of thirteen flowers. Fitzgerald speaks of a specimen bearing twenty-four flowers. The only locality in which I have obtained it in South Australia is Monarto South, growing in mallee scrub in sandy soil. It blossoms early in September.

#### PTEROSTYLIS PARVIFLORA, Br.

This plant has been recorded in all the Eastern States and Tasmania, but not hitherto from South Australia. It seems to be a somewhat elusive species so far as this State is concerned. Twice only have I received it, and in both instances the specimens were imperfect. The first specimen was collected by Mr. E. Ashby in the swamps of Myponga nine years ago. The second was found at Yatala Vale four years ago. These localities have been carefully searched many times since, but without success.

The time of blooming was stated in both cases to be December.

*Description*.—Plant very slender, 3 in. to 7 in., with (rarely) or without basal leaves. When present these appear in the form of a lateral tuft of two to four diminutive, petiolate, ovate leaves. There are usually three acute sheathing bracts on the stem in addition to those subtending the flowers. *Flowers* one to seven, on short pedicels, subtended by a bract, small, green, looking towards the central axis of the stem, except where terminal. *Galea* three and a half to four and a half lines, much incurved, hardly acuminate. *Conjoined sepals* erect, with shortly acuminate points. *Labellum* on movable claw, oblong with rather blunt tip, raised longitudinal mesial line on lamina; appendage recurved, terminating in a few setæ; reaching to about the same height as the

column. *Column* not nearly as high as the top of the galea; lower angle of the wings blunt, ciliated; upper angle produced into a long sharp point; anther oblique, hinged, 2-celled. *Stigma* prominent, bilobed, ovate-lanceolate, point downwards.

MICROTIS PARVIFLORA, Br.

This somewhat ill-defined species has a very wide distribution. It has been recorded from all the States of the Commonwealth with the exception of our own, and it extends into New Caledonia, the Indian Archipelago, and Southern China. Its name does not appear in Mueller's Census, as that botanist includes it under *M. porrifolia* of Sprengel. Bentham describes it as a species, though with some reservations. He thinks that at least it should claim the distinction of "a well-marked variety." Through the courtesy of Professor Ewart, of Melbourne, I have had the opportunity of examining specimens of this plant from Queensland, the Port Jackson district, and Western Australia, which have passed through the hands of Bentham, who had access to the type. These specimens show considerable variation, especially in the form of the labellum. The same thing is noticeable in plants in my own collection from eastern and western localities. This plant in its most common or sparsely-spiked form differs very materially in habit from *Microtis porrifolia*, and I have reason to believe that it differs also in its mode of pollination. The northern type, so common in Queensland, appears to be quite distinct morphologically from *porrifolia*, and to conform most closely to Brown's description. It would seem as though, instead of a reduction of this species, further differentiation is needed. The custom has been to include under this species plants with the narrow or oblong form of labellum, without due regard to the number or situation of callosities on the lamina and without too much insistence upon the integrity of the margins of the latter. The plant is slender, the flowers are smaller than in the case of *M. porrifolia*, and usually situated distantly from each other on the spike. Sometimes, however, this last character is reversed, and the inflorescence occurs in the form of a dense spike (var. *densiflora*).

The following is a description of the South Australian form:—A rather tall, very slender plant, from 7 in. to 17 in. in height; fistula of leaf situated nearer the base than the spike, the leaf itself generally reaching higher than the bottom of the spike. *Flowers* green, in a sparse spike, each subtended by an acute bract which exceeds the pedicel in length; pedicel slender, about a line long. *Dorsal sepal* hooded, acuminate, rather less than a line in length. *Lateral sepals* about same length as dorsal sepal, lanceolate, revolute in the mature

flower. *Lateral petals* bluntly linear, erect, much shorter than the dorsal sepal, by which they are generally hidden. *Labellum* about same length as dorsal sepal, oblong with wide blunt tip, latter generally slightly emarginate. pinched laterally; margins crenulated, almost entire; lamina with two basal callosities and one near tip, traversed by three parallel longitudinal nerves. *Column* short, anther not pointed, auricles large and prominent.

This species differs from *M. porrifolia* in its much more slender form, its smaller flowers, and very attenuated inflorescence. It differs also in the shape of the labellum, which is very much narrower and of fairly uniform width throughout, with square corners to the tip; whereas in the other species it is very much wider at the tip than the base, and the corners of the tip are rounded. The anther is pointless in *M. parviflora*, it is acuminate in *porrifolia*; also the auricles are very much more conspicuous in the former than in the latter species. Variety *densiflora* is a very much shorter and stouter form from 4 in. to 7 in. high, generally growing in colonies. The spike is very densely crowded, and in outward appearance the two forms look very different. Structurally, however, the flowers are the same.

Both the attenuated and dense forms were found growing in great numbers at Mount Compass about the middle of December. Since then I have found the attenuated form at Bridgewater during the same month.

AUSTRALIAN HYMENOPTERA PROCTOTRYPOIDEA.  
No. 1.

Family SCELIONIDÆ.

By ALAN P. DODD.

Communicated by A. M. LEA.

[Read August 14, 1913.]

In this paper I give a list of the described species in the two subfamilies *Scelioninæ* and *Telenominæ* with descriptions of new genera and species. Australia is, no doubt, very rich in these insects, and I have added ninety-three species to the few already known. Most of these insects were obtained by Mr. A. A. Girault and myself on the north-east coast of Queensland. Besides these, I have received several species from the South Australian Museum and a few from my father, Mr. F. P. Dodd, of Kuranda. The only locality where much collecting has been done is in the vicinity of Nelson. Small collections have been made by Mr. Girault at different localities between Thursday Island and Brisbane, and I have made a moderate-sized collection around Kuranda. I have to thank Mr. Girault for his many kindnesses in assisting me with the work and for the numerous specimens collected by him. I also wish to thank my father for the specimens he has given me. With regard to literature, I have used the following:—Ashmead's North American *Proctotrypidae*, 1893; Brues' Family *Scelionidæ*, in Wytzman, 1908; Kieffer's Family *Scelionidæ*, Addenda and Corrigenda, in Wytzman, 1910; also several papers of minor importance.

The types are all in the possession of the South Australian Museum.

The magnification used was  $\frac{2}{3}$ -in. objective, 1-in. optic, Bausch and Lomb.

Subfamily SCELIONINÆ.

Table of Australian Genera.

- |  |                              |
|--|------------------------------|
| (1) Body completely flattened; scape triangular, broad; female antennæ 12-jointed ... .. | <i>Platyscelio</i> , Kieffer |
| Body not flattened; scape slender ... ..   | (2)                          |
| (2) Forewings without venation ... ..  | (3)                          |
| Forewings with venation; female antennæ 12-jointed, tarsi slender ... ..                 | (4)                          |

- (3) Female antennæ 10-jointed, tarsi stout, abdomen sessile ... .. *Rieliomorpha*, nov. gen.  
 Female antennæ 12-jointed, tarsi slender, abdomen petiolate ... .. *Mallateleia*, nov. gen.
- (4) Postmarginal vein absent ... .. (5)  
 Postmarginal vein present ... .. (9)
- (5) Abdomen petiolate ... .. (6)  
 Abdomen sessile, venation distinct ... .. (7)
- (6) Venation distinct; stigmal spot, median and basal veins absent ... *Paridris*, Kieffer  
 Forewings without true veins but with thick lines indicating submarginal, median, basal, and stigmal veins and a stigmal spot ... *Mallateleioides*, n. gen.
- (7) Postscutellum produced into a long spine, maxillary palpi 3-jointed ... *Neoscelio*, nov. gen.  
 Postscutellum not spined ... .. (8)
- (8) Male antennæ 12-jointed, maxillary palpi 5-jointed ... .. *Sceliomorpha*, Ashmead  
 Male antennæ 10-jointed, maxillary palpi 3-jointed ... .. *Scelio*, Latreille
- (9) Abdomen sessile ... .. (10)  
 Abdomen petiolate or subpetiolate ... .. (15)
- (10) Abdomen not or scarcely longer than wide ... .. (11)  
 Abdomen distinctly longer than wide ... .. (12)
- (11) Median and basal veins distinct ... *Platyteleia*, nov. gen.  
 Median and basal veins absent ... *Hadrionotus*, Foerster
- (12) First and second funicle-joints of female antennæ forming on ovate piece; club compact, divided obliquely ... .. *Cremastoscelio*, nov. gen.  
 First and second funicle-joints of female antennæ not forming one piece; club not compact, the divisions distinct ... .. (13)
- (13) Postscutellum spined ... .. *Anteromorpha*, n. gen.  
 Postscutellum not spined ... .. (14)
- (14) Abdomen narrowed at the base; marginal vein longer than the stigmal; mesonotum without furrows ... .. *Platogryon*, Kieffer  
 Abdomen not narrowed at the base; marginal vein much shorter than the stigmal; mesonotum with three furrows ... .. *Hoploteleia*, Ashmead
- (15) Scutellum with two spines in front ... *Dichoteleas*, Kieffer  
 Scutellum not spined ... .. (16)
- (16) Mesonotum with three furrows ... *Romilius*, Walker  
 Mesonotum with two furrows, often absent ... .. (17)
- (17) Marginal vein longer than the stigmal ... .. (18)  
 Marginal vein shorter than the stigmal ... .. (19)
- (18) Head subquadrate; abdomen fusiform, long and narrow ... .. *Macroteleia*, Westwood  
 Head transverse; abdomen spatulate, not longer than the head and thorax combined ... .. *Leptoteleia*, Kieffer

- (19) First abdominal segment short,  
without a horn; last funicle-joint  
of antennæ very minute ... *Opisthacantha*. Ashmead  
First abdominal segment longer  
than wide, usually with a horn;  
last funicle-joint not minute . . . *Ceratoteleu*, Kieffer

Genus *PLATYSCELIO*, Kieffer.

The genus *Platyscelio* was erected by Kieffer in 1905, and hitherto contained but two species, *P. pulchricornis*, Kieffer, from New Guinea, and *P. abnormis*, Crawford, from the Philippine Islands.

*PLATYSCELIO MIRABILIS*, sp. nov.

♀. Black; the legs (with the exception of the tarsi) and antennal scape bright reddish-yellow; the tarsi and antennal funicle paler yellow. Head very flattened, the vertex very thin; viewed from in front the head is large, circular, with a deep groove running down the centre from the vertex, and branching in two towards the insertion of the antennæ. Eyes large. Antennæ 12-jointed: scape almost triangular, broadening on the outer side into a sharp point at the apex, where it is nearly as wide as long, and much wider than any of the other joints; pedicel and first funicle-joint subequal, longer than wide; second and third funicle-joints wider than long; fourth and fifth very transverse; club 5-jointed, very pronounced, the joints much wider than long, fourth the widest. Thorax flattened, long ovoid; pronotum viewed from above reaching back as far as the insertions of the forewings; mesonotum with two deep parapsidal furrows, parallel, wide apart; mesonotum with fine longitudinal lines of hairs; scutellum short; postscutellum very short. Forewings long, but not reaching to the apex of abdomen; moderately broad; infuscated, the infuscation deepest towards the costa; discal ciliation arranged in about forty rows; venation very thick; submarginal vein attaining the costa at about two-fifths wing length; marginal vein long, twice as long as the stigmal, which is very oblique, short, terminating abruptly; postmarginal and basal veins wanting. Abdomen flattened; longer than the head and thorax united; wholly clothed with longitudinal rows of fine hairs; segments 2-5 equal in length. Legs rather stout; tibiae as long as their tarsi; basal joint of posterior tarsi eight times as long as the second joint. Length, 5 mm.

Described from a single female specimen captured while sweeping in open forest, February 16, 1912.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type*.—I. 1362, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewing.

Genus *DICHOTELEAS*, Kieffer.

*Type*.—*Dichotelea rugosus*, Kieffer, 1907, Australia. I have not seen the description of this species.

Genus *ROMILIUS*, Walker.

*ROMILIUS DURIS*, Walker (1839).

♂. Black; antennæ black; coxæ black, apex of tarsi fuscous; rest of legs fulvous; wings infuscated; veins fuscous. Length, 3.50 mm.

*Hab*.—Tasmania: Hobart.

Genus *HOPLOTELEIA*, Ashmead.

*HOPLOTELEIA AUSTRALICA*, sp. nov.

♂. Shining-black; legs reddish-yellow; antennæ fuscous. Head transverse-quadrate, as wide as the thorax, rugulose; ocelli in a triangle, the lateral ones distant from the eye margins by one-third their own diameter. Antennæ 12-jointed; scape long and slender; pedicel short and stout; funicle-joints 1-3 subequal, distinctly longer than wide, narrowed at the base; 4-9 subequal, subquadrate, a little shorter than preceding joint; last funicle-joint one-half longer than preceding joint, two and a half times as long as wide. Thorax one-half longer than wide; rugulose; mesonotum finely sculptured, with three furrows. Forewings reaching to apex of abdomen: broad; hyaline; marginal cilia short; discal cilia rather coarse; submarginal vein attaining the costa at nearly one-half wing length; marginal vein very short; stigmal vein long, oblique; postmarginal nearly three times as long as the stigmal. Abdomen sessile; not as wide as the thorax; as long as head and thorax united; longitudinally striate; truncate; bispinose, the spines distinct. Length, 3 mm.

♀. Antennæ 12-jointed; fuscous; first three funicle-joints fulvous; pedicel scarcely as long as first funicle-joint, which is rather slender, twice as long as wide; second a little shorter than first; third shorter than second, scarcely longer than wide; fourth wider than long; club 6-jointed; joints scarcely wider than long; second joint the longest and widest of club.

*Hab*.—North Queensland: Nelson. A very common species.

*Type*.—I. 1363, South Australian Museum. A male, tagmounted, plus two slides bearing male and female antennæ and forewings.



## HOPLOTELEIA INSULARIS, sp. nov.

♀. Differs from *australica* in bearing infuscated wings and in the shape of the eyes, which are broadly oval in *australica*, the outer margin flattened, whereas in *insularis* they are much longer than wide, the margins rounded. Length, 3 mm.

*Hab.*—North Queensland: Horn Island, Torres Strait (A. A. Girault).

Described from a single female specimen caught by sweeping misc-vegetation, March 9, 1912.

*Type.*—I. 1364, South Australian Museum. A female, tagmounted, plus a slide bearing female antennæ and forewings.

## HOPLOTELEIA NIGRICORNIS, sp. nov.

♀. Differs from *australica* and *insularis* in having the antennæ wholly fuscous, the femora black, and the long posterior tarsi, which are much longer than their tibiæ, scarcely longer in *australica* and *insularis*. Length, 2.50 mm.

♂. Unknown.

*Hab.*—North Queensland: Kuranda; height, 1,200 ft. (A. P. Dodd).

Described from a single specimen caught by sweeping on edge of jungle, December 20, 1912.

*Type.*—I. 1365, South Australian Museum. A female, tagmounted, plus a slide bearing head and antennæ.

## HOPLOTELEIA PULCHRICORNIS, sp. nov.

♀. Differs from *australica*, *insularis*, and *nigricornis* in having scape, pedicel, and funicle-joints bright reddish-yellow: the thorax being a little wider than the head; the abdomen being as wide as the thorax and pointed at the tip, not truncate. Length, 3.50 mm.

♂. Unknown.

*Hab.*—North Queensland: Nelson (A. P. Dodd).

Described from a specimen caught running over foliage of *Areca australis*, April 3, 1913.

*Type.*—I. 1366, South Australian Museum. A female, tagmounted.

Table of the Australian species of *Hoploteleia*, Ashmead.

- |   |                             |
|---|-----------------------------|
| (1) Thorax wider than the head; abdomen as wide as the thorax, its apex pointed in the female; wings hyaline ... .. | <i>pulchricornis</i> , Dodd |
| Thorax not as wide as the head; abdomen not as wide as the thorax, the apex truncate in both sexes ...              | (2)                         |

- (2) Forewings hyaline .. .. . (3)  
 Forewings infuscated ... .. *insularis*, Dodd  
 (3) Posterior tarsi much longer than  
 their tibiae .. .. . *nigricornis*, Dodd  
 Posterior tarsi not longer than their  
 tibiae .. .. . *australica*, Dodd

Genus *SCELIO*, Latreille.

*SCELIO* GOBAR, Walker, 1839.

♂. Black; antennæ black; second joint ferrugineous; legs fulvous; coxæ black; tarsi fuscous at the apex; meso- and metafemora pitchy-black; wings fuscous; veins ferrugineous. Length, 4 to 4.75 mm.; wing expanse, 5.75 to 6.25 mm.

This species is not a *Scelio*, since, according to Walker, it has a rather long petiole, a marginal vein longer than the stigmal, a postmarginal vein longer than the marginal.

*Hab.*—Tasmania: Hobart.

*SCELIO AUSTRALENSIS*, Kieffer, 1905, New South Wales.

*SCELIO AUSTRALIÆ*, Kieffer, 1908, Australia.

*SCELIO BIPARTITUS*, Kieffer, 1907, Australia.

I have not seen the descriptions of these three species.

*SCELIO PULCHELLUS*, Crawford, 1911.

*Hab.*—New South Wales: Lake Cowal.

*Host.*—Small plague locust (*Chortoicetes pusilla*, Walker).

*SCELIO FROGGATTI*, Crawford, 1911.

*Hab.*—Central Queensland: Childers; North Queensland: near Cairns.

*Host.*—*Locusta danica*, Linn. (yellow-winged locust).

*SCELIO FULGIDUS*, Crawford, 1911.

*Hab.*—New South Wales.

*Host.*—*Locusta australis*, Brunner.

*SCELIO CHORTOICETES*, Froggatt, 1910.

*Hab.*—New South Wales: Lake Cowal.

*Host.*—Large plain locust (*Chortoicetes terminifera*, Walker).

*SCELIO AUSTRALIS*, Froggatt, 1910.

This species was first described from specimens reared from eggs of *Locusta australis* (Brunner) at Herbert River, North Queensland. It is a common species around Nelson, and can be found in company with *ovi*, Girault. Mr. A. A. Girault found it very plentiful on the Herbert River in February, 1913, in the egg-beds of *Locusta danica*, Linn. From one

cubic foot of earth, picked at random in an egg-bed, 600 of the parasites emerged, and only fifty locusts. At night the insects rested on blades of grass. I examined 264 specimens, of which 248 were females and sixteen were males. I found no variations in colour.

*Hab.*—North Queensland: Herbert River, Nelson, near Cairns.

*Hosts.*—*Locusta australis*, Brunner; *L. danica*, Linn.

#### SCELIO OVI, Girault, 1913.

This species is common in the vicinity of Nelson, where it has been bred from the eggs of *Locusta danica*, Linn.

*Hab.*—North Queensland: Nelson, near Cairns.

*Host.*—*Locusta danica*, Linn.

#### SCELIO FROGGATTI, Crawford.

♂. A male specimen of a *Scelio*, which is probably *S. froggatti*, Crawford, was caught on the mainland, some miles north of Cairns, December 24, 1911 (A. A. Girault). The wings are but slightly infuscated and the antennæ are honey-yellow. This may be distinct from *froggatti*, of which only the female is described by Crawford; but since the host (*Locusta danica*, Linn.) is to be found around Cairns, it is quite probable that the same parasite would attack it. Length, 3.50 mm.

#### SCELIO FLAVICORNIS, sp. nov.

♂. Black; legs, except coxæ, reddish-yellow; coxæ black; antennal scape black; rest of antennæ golden-yellow. Differs from *australis*, Froggatt, and *ovi*, Girault, in structure as follows:—Abdomen finely longitudinally striate; second and third segments with median areas not striate; fourth abdominal segment distinctly longer than third; third funicle-joint of antennæ not dilated; wings hyaline, venation pale-yellow, indistinct. Length, 3.50 mm.

Described from a single male specimen caught while sweeping in the forest, February 20, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1367, South Australian Museum. A male, tagmounted, plus a slide bearing male antennæ and forewing.

#### SCELIO NIGRICORNIS, sp. nov.

♂. Differs from *flavicornis* in having the femora much suffused with black; the antennæ wholly fuscous; first abdominal segment striate; remaining segments very finely reticulately rugulose; third segment distinctly the longest. Length, 3 mm.

Described from two male specimens captured while sweeping in forest, November, 1912, and April, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1368, South Australian Museum. A male, tagmounted, plus a slide bearing male antennæ and forewing.

*SCELIO NIGRISCUTELLUM*, sp. nov.

♀. Thorax beautiful reddish-yellow; scutellum black; abdomen black; legs, including coxæ, reddish-yellow. Pronotum visible from above on the sides only, coarsely rugulose; mesoscutum coarsely rugulose on anterior half, without sculpture on the posterior half; parapsidal furrows distinct posteriorly; scutellum coarsely rugulose; metanotum finely reticulately rugulose. Abdomen wholly longitudinally striate dorsad; second segment greatly depressed at the base; third segment the longest. Length, 3.25 mm.

The single specimen on which this species is based is without head, antennæ, and wings. It appears to be a typical *Scelio*, and is much alike the other Australian species in structure.

*Hab.*—North Queensland (?).

*Type.*—I. 1369, South Australian Museum. A female, tagmounted.

*SCELIO PILOSUS*, sp. nov.

♀. Very like *australis*, Froggatt, from which it differs in having funicle-joints 2-4 very short, three times as wide as long; not twice as wide as long in *australis*. Also in *pilosus* the head, especially the cheeks, pronotum, and sides of thorax, are covered with long whitish pubescence; this is not distinct in *australis*. Length, 3.75 mm.

Described from a single female specimen received from the South Australian Museum and labelled "Cairns dist.; A. M. Lea."

*Hab.*—North Queensland: Cairns district.

*Type.*—I. 1370, South Australian Museum. A female, tagmounted, plus a slide bearing female antennæ and forewings.

Table of some of the Australian species of *Scelio*, Latrielle <sup>(1)</sup>

(1) Thorax reddish-yellow, the scutellum	
black; abdomen black ... ..	<i>nigriscutellum</i> , Dodd
Thorax shining-black; abdomen	
shining-black (except in <i>fulgidus</i> ,	
Crawford) ... ..	(2)

(1) I have omitted *S. australis*, Kieffer; *S. australiensis*, Kieffer; and *S. bipartitus*, Kieffer, as I have not their descriptions,

- (2) Head with a few scattered punctures; wings infuscated ... (3)  
 Head rugulose ... (4)
- (3) Abdomen wholly striate; shining-black ... *pulchellus*, Crawford  
 First and segments striate; abdomen dark-brown ... *fulgidus*, Crawford
- (4) Forewings hyaline ... (5)  
 Forewings more or less infuscated ... (6)
- (5) First abdominal segment striate, others rugulose; male antennæ fuscous ... *nigricornis*, Dodd  
 Abdomen wholly striate; male antennæ, except scape, golden-yellow ... *flavicornis*, Dodd
- (6) Abdomen wholly longitudinally rugulose: forewings not much infuscated ... *froggatti*, Crawford  
 First and second segments striate, others punctured; forewings not much infuscated ... *chortoicetes*, Froggatt  
 Abdomen wholly striate, forewings much infuscated ... (7)
- (7) Female antennæ black; male antennæ with first three joints black, others suffused with yellow ... (8)  
 Female antennæ with first three joints reddish-yellow; male antennæ reddish-yellow ... *ovi*, Girault
- (8) Head, pronotum, sides of thorax covered with whitish pubescence ... *pilosus*, Dodd  
 Pubescence not distinct ... *australis*, Froggatt

#### NEOSCELIO, nov. gen.

♀. Like *Scelio*, Latrielle, but the antennal funicle is not widened and compressed, and the club is distinct, 6-jointed; the postscutellum is produced caudad into a long, semi-erect spine; the abdomen is subsessile, first segment as long as wide, second longer, third the longest, remaining segments short; abdomen no longer than head and thorax united, wider than the thorax; maxillary palpi 3-jointed.

*Type*.—*Neoscelio gloriosus*, described herewith.

#### NEOSCELIO GLORIOSUS, sp. nov.

♀. Black; legs, including coxæ, reddish-yellow; scape, pedicel, and funicle-joints of antennæ reddish-yellow. Head coarsely reticulately rugulose, a little wider than the thorax; ocelli large, in a triangle, close together, the lateral ones distant from the eye margins by more than their own diameter; mandibles bidentate, external tooth long, inner tooth short. Antennæ 12-jointed; scape long and slender, but scarcely longer than next two joints combined; pedicel rather long, one-half longer than wide; first funicle-joint long, two-thirds longer than the pedicel; second joint one-half length of first;

third and fourth a little wider than long; club 6-jointed, second joint slightly the longest and widest. Thorax coarsely reticulately rugulose; parapsidal furrows not visible. Forewings broad; much infuscated; marginal cilia short; discal cilia arranged in about forty rows; venation very distinct; submarginal vein terminating about the middle of the wing; stigmal spot dark, nearly square with a narrow branch that runs to the end of the stigmal vein; stigmal vein rather short, not knobbed at tip, with a long indistinct radial branch. Abdomen wholly longitudinally rugulose, with a distinct carina running down the centre. Length, 5 mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

*Type.*—I. 1371, South Australian Museum. A female, tagmounted, plus a slide bearing female antenna and forewing.

#### Genus *SCELIOMORPHA*, Ashmead.

*SCELIOMORPHA FLAVIPES*, Kieffer, 1907, Australia.

I have not seen the description of this species.

#### *SCELIOMORPHA RUGULOSA*, sp. nov.

♀. Shining-black; legs, including coxæ, reddish-yellow; apical tarsal-joints fuscous; scape, pedicel, and first three funicle-joints of antennæ golden-yellow. Head and thorax rugulose; mesonotum with two distinct furrows; abdomen as wide as the thorax, no longer than head and thorax combined; first segment striate, the others longitudinally rugulose; second segment the longest, a little longer than the third. Antennæ 12-jointed; scape long and slender, equal to next four joints combined; pedicel rather slender, twice as long as wide; first funicle-joint scarcely as long as the pedicel; second and third shorter, wider than long; last funicle-joint a little widened; club 6-jointed, first joint distinctly the longest. Forewings extending a little beyond tip of abdomen; broad; infuscated; discal cilia moderately coarse and dense; venation lemon-yellow; submarginal vein attaining the costa slightly beyond the middle of the wing; stigmal spot obsolete; stigmal vein long, very oblique. Length, 3 mm.

♂. Antennal scape, pedicel, and first funicle-joint golden-yellow, remainder suffused more or less with black; pedicel shorter than first funicle-joint, which is twice as long as wide; funicle-joints 2-9 subquadrate, a little longer than wide; antennæ slightly tapering towards the apex; last funicle-joint elongate, as long as first.

*Hab.*—North Queensland. A common species on the edges of jungle at Nelson; also captured at Kuranda.

*Type*.—I. 1372, South Australian Museum. A female and male, tagmounted, plus two slides bearing male and female antennæ and forewings.

Genus CERATOTELEIA, Kieffer.

Kieffer erected the genus *Ceratoteleia* in 1908 to contain most of Ashmead's species of *Caloteleia*, Westwood. In 1910 Kieffer listed sixteen species from America and Europe.

CERATOTELEIA SPLENDIDA, sp. nov.

♀. Black; a large patch involving nearly all the thorax, a square patch in the centre of the abdomen, legs, scape, pedicel, and funicle-joints reddish-yellow. Head finely sculptured, not as wide as the thorax. Antennæ 12-jointed; scape long and moderately slender; pedicel three times as long as wide; first funicle-joint as long as the pedicel; second half the length of first, a little longer than wide; third shorter, quadrate; last funicle-joint shorter and wider, transverse, twice as wide as long; club 6-jointed, joints 1-5 much wider than long, 1-3 subequal, widest, last joint short, a little longer than wide. Thorax longer than wide, punctate; mesonotum without furrows. Forewings when closed barely extending to end of abdomen; broad; infuscated; the marginal cilia short; the discal cilia very dense, arranged in about fifty lines; submarginal vein attaining the costa about the middle of the wing; marginal vein very short; stigmal vein long, oblique, knobbed at tip; postmarginal vein barely as long as the stigmal; basal vein not very distinct, distant from the marginal by one-half its own length. Abdomen as wide as the thorax, as long as the head and thorax combined; much narrowed at the base; wholly longitudinally striate dorsad; the third segment the longest, longer than wide; basal segment with a pronounced horn. Length, 2.75 mm.

♂. Unknown.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea).

Described from a single specimen.

*Type*.—I. 1373, South Australian Museum. A female, tagmounted, plus a slide bearing forewing and antennæ.

CERATOTELEIA FLAVA, sp. nov.

♀. Golden-yellow; apex of abdomen, head, a small patch on the mesonotum, another on the scutellum, tubercle on abdomen, and antennal club black. Differs from *splendida* in structure as follows:—Head slightly wider than the thorax. Second funicle-joint of antennæ nearly as long as first; last funicle-joint only slightly wider than long; club rather slender, the joints not one-half wider than long. second joint

the widest. Mesonotum with two distinct furrows. Forewings slightly infuscated; not so broad as in *splendida*; marginal vein nearly as long as the stigmal, which is rather short, very oblique, the end curved caudad; postmarginal vein three times the length of the stigmal; basal vein very distinct. Abdomen with first, second, and part of third segment longitudinally striate: basal segment with a raised tubercle. Length, 2.25 mm.

Described from a single female specimen taken on window of a residence, Cooktown, North Queensland, February 3, 1912.

*Hab.*—North Queensland: Cooktown (A. A. Girault).

*Type*—I. 1374, South Australian Museum. A female, tagmounted, plus a slide bearing forewing and antenna.

CERATOTELEIA INORNATA, sp. nov.

♂. Head and antennal joints, except the scape, black, thorax deep-brown mixed with black; abdomen brownish-black, with a yellow patch in the centre; legs and antennal scape golden-yellow (the description is taken from a specimen on a slide). Antennæ 12-jointed; scape not as long as next three joints combined; pedicel short, but a little longer than wide; funicle-joints long and cylindrical; first longer and narrower than the pedicel, three times as long as wide; second longer than first; the others gradually diminishing in length, but the last joint is as long as second funicle-joint. Forewings when closed not reaching apex of abdomen; moderately broad; hyaline; the discal cilia arranged in about twenty rows; venation as in *flava*, but basal vein obsolete. Related to *flava*, from which it differs in colouration, the absence of the basal vein, and the hyaline wings. Length, 1.90 mm.

Described from a single specimen caught November 12. Later another male was found.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type*.—I. 1375, South Australian Museum. A male on a slide.

CERATOTELEIA BRUNNEA, sp. nov.

♀. Head black; most of thorax and abdomen reddish-brown; legs, antennal scape, pedicel, and funicle-joints golden-yellow; rest of antennæ black. Differs from *flava* in structure as follows:—First funicle-joint distinctly longer than the pedicel; second as long as the pedicel; last funicle-joint a little longer than wide; club-joints wider than in *flava*. Forewings with the marginal vein only one-third as long as the stigmal, which is long, very oblique, the end slightly curved; basal vein indistinct. (The body of this species was lost.) Length, 2.25 mm.



Described from a single specimen caught on a window, February 23, 1912.

*Hab.*—North Queensland: Rossville, near Cooktown (A. A. Girault).

*Type.*—I. 1376, South Australian Museum. A slide bearing female antennæ and forewings.

CERATOTELEIA PULCHRA, sp. nov.

♀. Colour, beautiful reddish-yellow; eyes, ocelli, tubercle on basal segment of abdomen, tip of abdomen, and antennal club black. Differs from *splendida* in colour and size and in structure as follows:—Pedicel and first funicle-joint of antennæ shorter. Parapsidal furrows present. Forewings much narrower, more infuscated, the apex very rounded. Length, 1.75 mm.

Described from a single specimen caught while sweeping in forest February 19, 1912.

*Hab.*—North Queensland: Ingham (A. A. Girault).

*Type.*—I, 1377, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewings.

CERATOTELEIA MAGNIFICA, sp. nov.

♂. Head black; thorax beautiful reddish-yellow; abdomen dusky-yellow, with a golden yellow area in the centre; legs golden-yellow; antennæ dusky-yellow. Closely related to *splendida*, but the stigmal vein, although not more oblique, is curved slightly; the postmarginal vein is a little longer than the stigmal. Antennæ 12-jointed; scape no longer than next two joints combined; pedicel short and stout, one-third as long as first funicle-joint; funicle-joints long and cylindrical; first one-third longer than the second; 2.9 subequal; last funicle-joint as long as the first. Length, 2.60 mm.

Described from a single specimen caught by sweeping grass and foliage on edge of jungle December 19, 1912.

*Hab.*—North Queensland: Kuranda, near Cairns, 1,300 ft. (A. P. Dodd).

*Type.*—I. 1378, South Australian Museum. A male, tagmounted, plus a slide bearing antennæ and forewings.

CERATOTELEIA BELLA, sp. nov.

♀. Head, apical segments of abdomen, and antennal club black; thorax beautiful reddish-yellow; first and second abdominal segments dusky-yellow; third abdominal segment, legs, and antennal scape, pedicel and funicle-joints golden-yellow. Coloration nearly as in *magnifica*. Parapsidal furrows present. Closely related to *flava* and *brunnea*. Differs

from *flava* in the longer third funicle-joint; the stigmal vein very oblique, but not curved, basal vein very indistinct; abdomen with only a slight indication of a tubercle. Differs from *brunnea* in the first funicle-joint being no longer than the pedicel, the evenly-rounded wings and the marginal vein being nearly as long as the stigmal. Length, 1.75 mm.

Described from a single specimen labelled "On windows, January 11, 1912."

*Hab.*—North Queensland: Innisfail (A. A. Girault).

*Type.*—I. 1379, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

*CERATOTELEIA FASCIATA*, sp. nov.

♀. Golden-yellow; abdomen with four dark bands; eyes, ocelli, and antennal club black. Head subquadrate, one-half wider than long, slightly wider than the thorax; thorax narrow, two-thirds longer than wide; parapsidal furrows delicate, but distinct. Abdomen very narrowed at the base; longer than the head and thorax united; as wide as the head; basal segment with a distinct horn. Antennæ 12-jointed; scape not as long as the two following joints combined; pedicel slender, two and a half times as long as wide; first funicle-joint almost as long as the pedicel, twice as long as wide; second almost as long as first; third shorter, a little longer than wide; fourth shorter than the third, as wide as long; last funicle-joint transverse; club 5-jointed, all the joints, except the last, much wider than long, second the widest. Forewings when closed extending almost to tip of abdomen; very narrow, four times as long as the greatest width; first third of wing hyaline, followed by broad infuscated band crossing the wing at the marginal vein, followed by a narrow hyaline area: last third of wing infuscated; submarginal vein attaining the costa at one half the wing length; marginal vein two-thirds as long as the stigmal, which is rather short, oblique, with a distinct knob; postmarginal vein long, one-half length of submarginal; basal vein obsolete. Abdomen finely striate. Legs very long and slender; tibiæ slender; tarsi longer than their tibiæ. Length, 1.50 mm.

♂. The same, but without a horn on the abdomen. The two male specimens both have the antennæ missing.

From one female and 2 male specimens labelled "On window, Innisfail, January 2, 1912"; "Sweeping in forest on mainland, near Double Island, Cairns, December 24, 1911"; and "On window empty dwelling house, Cooktown, February 6, 1912."

*Hab.*—North Queensland: Cooktown, Double Island (near Cairns), and Innisfail (A. A. Girault)

*Type*.—I. 1380, South Australian Museum. A female, tagmounted, plus a slide bearing forewings and female antennæ.

*CERATOTELEIA EXIMIA*, sp. nov.

♀. Colour as in *fasciata*, but bands on abdomen partly obliterated; antennal club dusky-brown. Differs from *fasciata* in structure as follows:—Thorax only one-half longer than wide; abdomen no longer than head and thorax united; basal segment without a horn or tubercle. Antennæ 12-jointed; scape equal to next four joints combined; pedicel rather short, one-half longer than wide; first funicle-joint scarcely longer than the pedicel; 2-4 wider than long, the fourth very small; fifth transverse, much widened; club 5-jointed, 1-4 very wide, fully twice as wide as long. Forewings as in *fasciata*, but distinctly wider; submarginal vein attaining the costa distinctly beyond the middle of the wing. Legs not so slender as in *fasciata*. Length, 1.50 mm.

Described from two specimens labelled "Sweeping vegetation near jungle along streamlet; height, 500 ft., October 28, 1911."

*Hab*.—North Queensland: Babinda (A. A. Girault).

*Type*.—I. 1381, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewing.

Table of the Australian species of *Ceratoteleia*, Kieffer.

(1) Forewings not banded	...	...	(2)
Forewings banded	..	...	(8)
(2) Forewings more or less infuscated	...	...	(3)
Forewings hyaline	...	...	<i>inornata</i> , Dodd
(3) Postmarginal vein not or scarcely longer than the stigmal, stigmal not very oblique	...	...	(4)
Postmarginal vein more than twice as long as the stigmal, stigmal very oblique	...	...	(6)
(4) Postmarginal vein shorter than the stigmal, stigmal vein not curved	...	...	(5)
Postmarginal vein a little longer than the stigmal, stigmal vein a little curved	...	...	<i>magnifica</i> , Dodd
(5) Mesonotum without parapsidal furrows	...	...	<i>splendida</i> , Dodd
Mesonotum with parapsidal furrows	...	...	<i>pulchra</i> , Dodd
(6) Basal vein indistinct	...	...	(7)
Basal vein very distinct	...	...	<i>flava</i> , Dodd
(7) First funicle-joint distinctly longer than the pedicel	...	...	<i>brunnea</i> , Dodd
First funicle-joint not longer than the pedicel	...	...	<i>bella</i> , Dodd
(8) Abdomen with a horn on basal segment, pedicel slender	..	...	<i>fasciata</i> , Dodd
Abdomen without a horn on basal segment, pedicel stout	...	...	<i>eximia</i> , Dodd

Genus *LEPTOTELEIA*, Kieffer.

Kieffer erected the genus *Leptoteleia* in 1908 to contain the three American species of *Baryconus*, Foerster.

*LEPTOTELEIA AUSTRALICA*, sp. nov.

♂. Black; legs and first half of antennal scape reddish-yellow suffused with black. Head scarcely as wide as the thorax, which is two-thirds longer than wide; abdomen narrowed at the base, no longer than the head and thorax united, as wide as the thorax. Antennæ 12-jointed; scape as long as next three joints combined; pedicel short and stout; first funicle-joint a little longer than the pedicel, one-half longer than wide; second and third subequal, a little longer than the first; 4-9 gradually shortening; last joint as long as second and third funicle-joints. Forewings when closed extending well beyond tip of abdomen; rather narrow; infuscated; submarginal vein close to the costa and joining it at one-half wing length; marginal vein two and a half times the length of the stigmal, which is very short, oblique, with a distinct knob; postmarginal vein one-half longer than the marginal; basal vein almost perpendicular, distant from the marginal vein by one-half its own length. Length, 1.50 mm.

Described from a single specimen caught by sweeping miscellaneous vegetation October 5, 1911.

*Hab.*—Queensland: Roma (A. A. Girault).

*Type.*—I. 1382, South Australian Museum. A male, tagmounted, plus a slide bearing antennæ and forewing.

*ANTEROMORPHA*, nov. gen.

♀. Head transverse-quadrate, as wide as the thorax; eyes large, bare; ocelli in a triangle, wide apart, the lateral one touching the eye margins; mandibles bidentate. Antennæ 12-jointed; scape long and slender; pedicel moderately long; first funicle-joint longer than wide; the others wider than long; club 6-jointed. Thorax ovoid, distinctly longer than wide; pronotum not visible from above; mesonotum large, as long as wide, the parapsidal furrows wanting or indistinct; scutellum semicircular; postscutellum produced into a triangular spine; metanotum short, unarmed. Forewings rather narrow; submarginal vein curving, and joining the costa a little beyond the middle of the wing; marginal vein not as long as the stigmal, which is very oblique, with a distinct knob; postmarginal longer than the stigmal; basal vein wanting. Abdomen sessile; a little wider than the thorax; as long as head and thorax combined; first segment short; second twice as long as first; third the longest, equal to first and second united.

♂. Antennæ 12-jointed; pedicel shorter than first funicle-joint; second funicle-joint shorter than first or third; third slightly dilated on the side; 4-9 moniliform.

*Type*.—*Anteromorpha australica*, described below.

ANTEROMORPHA AUSTRALICA, sp. nov.

♀. Head and thorax shining-black; abdomen dark-brown; legs and basal two-thirds of antennal scape golden-yellow; remaining joints black. Antennæ 12-jointed; scape equal to next four joints combined; pedicel and first funicle-joint subequal, one-half longer than wide; second funicle-joint slightly wider than long; third and fourth minute; club 6-jointed, fourth joint the longest and widest. Thorax finely pubescent. Forewings much infuscated; marginal cilia short; discal cilia very fine and dense; marginal vein short, one-fourth as long as the stigmal; postmarginal a little longer than the stigmal. Abdomen with first and second segments striate. Length, 1.70 mm.

♂. Antennæ 12-jointed; pedicel short and stout; first funicle-joint longer than the pedicel, longer than wide; second a little shorter; third slightly longer than second; 4-9 subequal, moniliform; last funicle-joint as long as first.

Described from one female and five male specimens caught at Nelson and Quingilli, near Cairns, and Rossville, near Cooktown.

*Hab*.—North Queensland: Nelson and Quingilli, near Cairns; Rossville, near Cooktown.

*Type*.—I. 1383, South Australian Museum. A male, tagmounted, plus a slide bearing male and female antennæ, head, and forewings.

ANTEROMORPHA ASSIMILIS, sp. nov.

♂. The same as *australica*, but forewings only slightly infuscated; marginal vein two-thirds length of stigmal. Length, 1.60 mm.

Described from a single specimen caught while sweeping in forest December 12.

*Hab*.—North Queensland: Nelson (A. P. Dodd).

*Type*.—I. 1384, South Australian Museum. A male, tagmounted, plus a slide bearing antennæ and forewing.

Genus OPISTHACANTHA, Ashmead.

A genus erected by Ashmead in 1893. It contains but five species from America and the Philippines.

## OPISTHACANTHA AUSTRALICA, sp. nov.

♀. Head and thorax black; abdomen dark-brown; legs pale-yellow, suffused with black; antennæ dusky-black. Head transverse, a little wider than the thorax. Antennæ 12-jointed; scape long and slender; pedicel one-half longer than wide; first funicle-joint slender, as long as pedicel, and slightly narrower; second almost as long as first; third shorter, but distinctly longer than wide; last funicle-joint very small; club 6-jointed, joints 1-5 much wider than long, third the widest. Thorax longer than wide; mesonotum with two furrows. Forewings moderately short; rather narrow; much infuscated; marginal cilia equal to one-sixth greatest wing width; discal cilia fine, arranged in about twenty rows; submarginal vein attaining the costa about the middle of the wing; marginal vein two-thirds length of stigmal, which is oblique, rather short, with a distinct knob; postmarginal three times length of stigmal; basal and median veins present. Abdomen no longer than head and thorax united; wider than the thorax; petiolate; first segment as long as wide; second longer; third the longest, equal to one-half abdominal length; first and second segments striate. Length, 1.45 mm.

Described from a single specimen caught while sweeping jungle in a bog June 31, 1912.

*Hab.*—North Queensland: Innisfail (A. A. Girault).

*Type.*—I. 1385, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

## OPISTHACANTHA NIGRICEPS, sp. nov.

♀. Head black; thorax and abdomen reddish-brown; legs and antennal scape golden-yellow; rest of antennæ dusky-black. Structure of head, thorax, and abdomen as in *australica*. Antennæ 12-jointed: scape long and slender; pedicel rather short; first funicle-joint longer than pedicel, twice as long as wide; second a little longer than wide; third as wide as long; fourth very small, a little widened; club 6-jointed, third and fourth joints the widest. Forewings when closed not reaching apex of abdomen; moderately narrow; infuscated; submarginal vein attaining the costa beyond the middle of the wing; marginal vein two-thirds length of stigmal, which is very oblique; postmarginal three times length of stigmal; basal vein distant from the marginal by nearly its own length. Length, 1.40 mm.

Described from a single specimen labelled "Sweeping grass, etc., jungle, October 28, 1911."

*Hab.*—North Queensland: Babinda, 36 miles south of Cairns (A. A. Girault).

*Type*.—I. 1386, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

Genus PARIDRIS, Kieffer.

A genus containing only four species, all from America.

PARIDRIS QUEENSLANDICA, sp. nov.

♀. Black; legs, antennal scape, pedicel, and funicle-joints golden-yellow. Head subquadrate; as wide as the thorax; mandibles bidentate. Antennæ 12-jointed; scape long and slender; pedicel rather long, fully twice as long as wide; funicle-joints distinctly narrower than the pedicel; first a little longer than wide; second as wide as long; third wider than long; fourth a little widened; club 6-jointed; wide; second joint the longest; third the widest. Thorax scarcely wider than long; mesonotum smooth, without parapsidal furrows; scutellum semicircular, with a punctate semicircular line. Forewings moderately narrow; much infuscated; discal cilia very fine and dense, arranged in about thirty-six rows; submarginal vein attaining the costa about the middle of the wing; marginal vein thickened, scarcely as long as the stigmal, which is rather short with a distinct knob; postmarginal vein wanting. Abdomen as long as head and thorax united; wider than the thorax; subpetiolate; third segment equal to one-half abdominal length; first and second segments striate. Length, 1.10 to 1.50 mm.

Described from a single specimen captured while sweeping in jungle, Goondi, near Innisfail, July 22 to 29, 1912. Also other females from Nelson and Babinda, near Cairns.

*Hab.* — North Queensland: Innisfail, Nelson, and Babinda, near Cairns (A. A. Girault).

*Type*.—I. 1387, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewings.

PARIDRIS TRIDENTATA, sp. nov.

♀. Differs from *queenslandica* in bearing tridentate mandibles; the forewings almost hyaline; the marginal vein only one-half as long as the stigmal. Length, 1.50 mm.

Described from a single specimen caught while sweeping in forest April 14, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type*.—I. 1388, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewings.

Genus *MACROTELEIA*, Westwood.

A genus comprising about thirty species from almost all over the world.

*MACROTELEIA MAGNA*, sp. nov.

♂. Black; legs and antennal scape reddish-yellow; rest of antennæ suffused with black, the more so on the last six joints; sometimes the head and thorax are partly dark-brown, as in the female. Head subquadrate; slightly wider than the thorax; densely punctured. Antennæ 12-jointed; scape long and slender; pedicel slender, three times as long as wide; first funicle-joint as long as the pedicel; second two-thirds as long as first; third as long as first; 4-9 subequal, subquadrate, a little longer than wide; last funicle-joint as long as first. Thorax one-half longer than wide; densely punctured; pronotum visible from above on the sides only; mesonotum with two distinct furrows. Forewings when closed not reaching two-thirds length of abdomen; broad; almost hyaline; marginal cilia very short; discal cilia dense, rather coarse, arranged in about forty rows; submarginal vein attaining the costa about the middle of the wing; marginal vein one-third longer than the stigmal, which is rather short, not very oblique, with a distinct knob; postmarginal vein twice as long as the marginal; venation very distinct. Length, 5 mm.

♀. Thorax and abdomen dark-brown, antennal club black, rest of antennæ reddish-yellow. Antennæ 12-jointed; first funicle-joint very long and slender, slightly longer than the pedicel, three times as long as wide; second two-thirds length of first; third a little shorter than second; fourth as wide as long; club 6-jointed, first joint the longest and widest, others gradually diminishing in width. Abdomen very long and narrow; fully two and a half times as long as head and thorax combined; narrower than the thorax; with longitudinal lines of long, fine hairs; first three segments longitudinally striate. Length, 5.5 mm.

Described from five male and one female specimens caught by sweeping in forest, November and December, 1912. Also one female received from the South Australian Museum and labelled "Cairns dist.; A. M. Lea."

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1389, South Australian Museum. A male and female tagmounted, plus a slide bearing male antenna and forewing.



## MACROTELEIA TORRESIA, sp. nov.

♀. Black; legs, antennal scape, pedicel and funicle-joints reddish-yellow. Differs from *magna* in structure as follows:—First funicle-joint of antennæ distinctly longer and narrower than the pedicel; second one-half the length of first; third and fourth wider than long. Forewings with the post-marginal vein no longer than the marginal. Parapsidal furrows indistinct or wanting. Abdomen only one-half longer than head and thorax combined. Length, 3.50 mm.

♂. Antennal scape yellow; rest of antennæ black, slightly suffused with yellow; pedicel twice as long as wide; first funicle-joint a little shorter than the pedicel; second shorter than first, as wide as long; third dilated on one side; 4-9 subequal, subquadrate; last joint as long as pedicel, Length, 3 mm.

Described from a male and female specimen labelled respectively "Sweeping grass in forest, Prosperpine, North Queensland, November 3, 1912 (A. A. Girault)," and "Sweeping grass, Thursday Island, Torres Strait, March 13, 1912."

*Hab.*—North Queensland: Thursday Island, Torres Strait; Proserpine, near Bowen (A. A. Girault).

*Type.*—I. 1390, South Australian Museum. A female and male, tagmounted, plus a slide bearing female antennæ and forewing.

## MACROTELEIA ANGUSTA, sp. nov.

♂. Differs from *magna* as follows:—Pedicel and first funicle-joint of antennæ only one-half longer than wide; last joint distinctly longer than the pedicel. Abdomen only one-half longer than head and thorax united. Length, 3.30 mm.

Described from a single specimen caught by sweeping on edge of jungle April 5, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1391, South Australian Museum. A male, tagmounted, plus a slide bearing male antennæ and forewings.

## MACROTELEIA MINIMA, sp. nov.

♀. Black; tibiae and tarsi reddish-yellow. Antennæ 12-jointed; scape no longer than the two following joints combined; pedicel fully twice as long as wide; first funicle-joint as long as pedicel, and narrower, three times as long as wide; second a little longer than first; third one-half as long as second; fourth wider than long; club 6-jointed, third joint slightly the widest. Thorax twice as long as wide; parapsidal furrows distinct. Forewings when closed not reaching apex of abdomen; moderately broad; hyaline; marginal vein scarcely

longer than the stigmal, which is very oblique, the end slightly curved distad, apex distinctly knobbed; postmarginal vein slightly longer than the marginal. Abdomen a little longer than head and thorax combined; wholly longitudinally striate. Length, 2.75 mm.

Described from three female specimens labelled "Sweeping on edge of jungle, streamlet, April 13."

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1392, South Australian Museum. A female, tagmounted, plus a slide bearing female antennæ and forewing.

Table of Australian species of *Macroteleia*, Westwood.

- |  |                        |
|--|------------------------|
| (1) Abdomen not wholly longitudinally striate ... ..               | (2)                    |
| Abdomen wholly longitudinally striate                              | <i>minima</i> , Dodd   |
| (2) Parapsidal furrows distinct . . .                              | (3)                    |
| Parapsidal furrows wanting ...                                     | <i>torresia</i> , Dodd |
| (3) Abdomen more than twice as long as head and thorax combined .. | <i>magna</i> , Dodd    |
| Abdomen not twice as long as head and thorax combined ..           | <i>angusta</i> , Dodd  |

MALLATELEIA, nov. gen.

♂. Head transverse-quadrate; scarcely wider than the thorax; eyes large, bare; ocelli in a triangle, the lateral ones equally distant from the eye margins and median ocellus. Antennæ 12-jointed; pedicel short; funicle-joints submoniliform. Thorax longer than wide; pronotum distinctly visible from above; mesonotum wider than long, with two distinct furrows; scutellum moderately large, semicircular. Forewings without veins. Abdomen petiolate; as long as head and thorax united; wider than the thorax; first segment longer than wide; third segment the longest. Legs rather long; tibiæ as long as their tarsi.

♀. Antennæ 12-jointed; scape long and slender; pedicel rather long; funicle-joints small, narrower than the pedicel; first funicle-joint longer than wide; the others wider than long; club 6-jointed. Basal segment of abdomen with a raised tubercle.

*Type.*—*Mallateleia giraulti*, described herewith.

MALLATELEIA GIRAULTI, sp. nov.

♂. Head reddish-yellow, the eyes and ocelli black; pronotum reddish-yellow; mesonotum and scutellum black, with a semicircular reddish-yellow patch in the centre of the mesonotum; rest of thorax reddish-yellow; abdomen black, slightly suffused with reddish-yellow; third segment golden-yellow;

legs, antennal scape, and pedicel reddish-yellow; antennal funicle black. Head finely sculptured; thorax pubescent; first and second abdominal segments striate. Funicle-joints 2-9 subequal, slightly shorter than first, as wide as long; last funicle-joint one-half longer than joint nine. Forewings hyaline; both margins straight, equally inclined; wings broadest near the apex; marginal cilia short; discal cilia long in the centre of the wing, very short near the wing margins, arranged in about forty-eight rows. Length, 1.75 mm.

♀. Antennal club black, rest of antennæ reddish-yellow; scape equal to next six joints combined; pedicel twice as long as wide; first funicle-joint a little longer than wide; third and fourth very short; club 6-jointed, joints much wider than long, third and fourth the widest.

Described from a male and a female specimen labelled "Sweeping in fields, Cooktown, February 2, 1912 (A. A. Girault)," and "Sweeping in forest, Cape R., Pentland, December 24, 1912 (A. A. Girault)." Later a second female was taken by sweeping in a strip of jungle, Nelson, April 19, 1913 (A. P. Dodd).

*Hab.*—North Queensland: Cooktown; Nelson, *via* Cairns; Pentland, 200 miles west of Townsville.

*Type.*—I. 1393, South Australian Museum. A male and female, tagmounted, plus a slide bearing male antennæ and forewings.

#### MALLATELEIODES, nov. gen.

♂. Head transverse-quadrate, slightly wider than the thorax; eyes large, bare; ocelli large, in a triangle, the lateral ones close to the eye margins. Antennæ 12-jointed; scape long and slender; pedicel rather short; first funicle-joint longer than the pedicel; second shorter than first, as wide as long; third longer than second, a little dilated on one side; 4-9 subequal, moniliform. Thorax longer than wide; pronotum visible from above on sides only; mesonotum with two distinct furrows; postscutellum and metathorax unarmed. Forewings with brown lines indicating a submarginal vein remote from the costa, which it joins before the middle of the wing; a stigmal spot replacing the marginal vein; a short stigmal vein; a basal vein almost perpendicular; a median vein as long as the submarginal. Abdomen subpetiolate; as long as head and thorax combined; a little wider than the thorax; first segment wider than long; third the longest.

*Type.*—*Mallateleioides splendida*, described herewith.

#### MALLATELEIODES SPLENDIDA, sp. nov.

♂. Deep reddish-brown; scutellum and most of mesonotum black; abdomen more or less suffused with black; eyes,

ocelli, and antennal funicle black; legs, antennal scape, and pedicel reddish-yellow. Forewings when closed extending a little beyond tip of abdomen; very broad; much infuscated, with light areas; marginal cilia very short; discal cilia dense, arranged in about fifty rows. Head and thorax rugulose; first and second abdominal segments striate. Length, 2.50 mm.

Described from a single specimen labelled "On windows of State Farm, October 6, 1911."

*Hab.*—South Queensland: Roma (A. A. Girault).

*Type.*—I. 1394, South Australian Museum. A male, tagmounted, plus a slide bearing male antennæ and forewings.

### Genus PLASTOGRYON, Kieffer.

#### PLASTOGRYON FASCIATIPENNIS, sp. nov.

♂. Brownish-black; legs slightly suffused with yellow. Head transverse, wider than the thorax; ocelli in a triangle, the lateral ones touching the eye margins; maxillary palpi 2-jointed; mandibles bidentate (?). Antennæ 12-jointed; scape long and slender; pedicel one-half longer than wide; first funicle-joint longer than the pedicel; second shorter than first, no longer than pedicel; 3-9 subequal, as long as wide; last funicle-joint as long as first. Thorax one-half longer than wide; mesonotum without parapsidal furrows. Forewings broad; rather short; first third of wing and a band at the middle, hyaline; rest of wing much infuscated; marginal cilia moderately long; discal cilia sparse, arranged in about sixteen rows; submarginal vein attaining the costa before the middle of the wing; marginal vein a little longer than the stigmal, which is rather long, a little oblique; postmarginal vein one-half longer than the marginal. Abdomen sessile; as wide as the thorax and scarcely longer; first segment striate; second segment the longest, a little longer than the first; third one-half as long as the second. Length, 1.25 mm.

Described from a single specimen captured by sweeping in forest, January 7, 1913.

*Hab.*—North Queensland: Pentland (A. A. Girault).

*Type.*—I. 1395, South Australian Museum. A male, tagmounted, plus a slide bearing head, antennæ, and forewing.

#### PLATYTELEIA, nov. gen.

♂. Head transverse, wider than the thorax. Antennæ 12-jointed; scape long and slender; first funicle-joint narrowed at the base, longer than the pedicel; second and third a little narrowed at the base, shorter than first; 4-9 subequal, subquadrate, a little longer than wide; last joint distinctly longer than first funicle-joint. Forewings when close extending well

beyond tip of abdomen: very broad; ciliated; but a narrow band across the centre of the wing naked; submarginal vein attaining the costa before middle of the wing; marginal vein nearly as long as the stigmal, which is long, a little oblique, with a distinct knob; postmarginal three times length of stigmal; basal and median veins present. Abdomen sessile; not narrowed at the base: wider than the thorax but scarcely longer.

The body of the only specimen was lost before a close examination had been made. However, the genus appears to agree in the structure of the body with *Hadronotus*, from which it differs in wing characters.

*Type*.—*Platyteleia latipennis*, described herewith.

PLATYTELEIA LATIPENNIS, sp. nov.

♂. Coal-black; legs and antennal scape golden-yellow; rest of antennæ fuscous. Forewings very broad: a little infuscated; marginal cilia short; discal cilia coarse, arranged in about thirty-six rows; venation distinct; naked band crossing the wing from last third of postmarginal vein to just beyond the end of median vein. Length, 2 mm.

Described from a single specimen taken by sweeping along streamlet, jungle, October 28, 1911.

*Hab*.—North Queensland: Babinda; height, 500 ft. (A. A. Girault).

*Type*.—I. 1396, South Australian Museum. A slide bearing forewing and antennæ.

Genus HADRONOTUS, Foerster.

HADRONOTUS PENTATOMUS, sp. nov.

♀. Shining-black; the legs, except the coxæ, reddish-yellow; antennæ suffused with red on proximal end of scape and at the junctions of the first six joints. Head transverse, wider than the thorax: rugulose; ocelli wide apart, the lateral ones distant from the eye margins by their own diameter. Antennæ 12-jointed; scape equal to next five joints combined; pedicel fully twice as long as wide; first funicle-joint as long as the pedicel and narrower, three times as long as wide; second one-half length of first; third a little widened; fourth wider than third, twice as wide as long; club 6-jointed; joints 1-5 much wider than long; first joint the longest; 1-3 widest. Thorax longer than wide; rugulose; pubescent; mesonotum without furrows; scutellum large. Forewings when closed extending beyond tip of abdomen; broad; hyaline; marginal cilia short: discal cilia coarse, arranged in about thirty rows: submarginal vein attaining the

costa a little before the middle of the wing; marginal vein one-fourth as long as the stigmal, which is long, oblique, with a distinct knob; postmarginal vein twice as long as the stigmal. Abdomen sessile; as wide as the thorax; no longer than head and thorax united; rugulose; first three segments subequal. Length, 2 mm.

♂. Antennal scape dark-red; rest of antennæ black; scape longer than next three joints combined; first funicle-joint longer than the pedicel; second shorter than first, as wide as long; 2-9 subquadrate, gradually narrowing towards the apex; last funicle-joint as long as first.

A very common species in the vicinity of Nelson. In April, 1913, two females were bred from pentatomid eggs. In the same month I saw 300 specimens clustered together on one leaf; on two adjacent leaves were clusters of 100 each. I have also specimens taken by Mr. A. A. Girault at Townsville and Thursday Island, Torres Strait.

*Hab.*—North Queensland: Townsville; Nelson, near Cairns; Thursday Island, Torres Strait.

*Type*—I. 1397, South Australian Museum. A female and male, tagmounted, plus a slide bearing female antennæ and forewings.

#### HADRONOTUS STRIATUS, sp. nov.

♀. Shining-black; legs reddish-yellow; antennal funicle suffused with red. Head and thorax punctate; abdomen striate. Antennæ 12-jointed; pedicel almost twice as long as wide; first funicle-joint a little shorter and narrower than the pedicel; second and third subequal, very small, as wide as long; fourth a little widened; club 6-jointed, joints 1-5 much wider than long, third and fourth the widest, first the longest. Forewings extending beyond tip of abdomen; broad; hyaline; submarginal vein attaining the costa about the middle of the wing; marginal vein very short; stigmal rather short; postmarginal vein no longer than the stigmal. Abdomen striate; first segment short; second segment long, equal to one-half abdominal length. Length, 1.40 mm.

Described from a single specimen caught on window of a blacksmith's shop, November 6, 1912.

*Hab.*—North Queensland: Ayr, 40 miles south of Townsville (A. A. Girault).

*Type*.—I. 1398, South Australian Museum. A female, tagmounted.

#### RIELIOMORPHA, nov. gen.

♀. Head transverse, as wide as the thorax; eyes very large, bare; ocelli in a triangle, the lateral ones distant from the eye margins by more than their own diameter; mandibles

large, with three small teeth; maxillary palpi 2-jointed, labials 1-jointed. Antennæ 10-jointed; scape long and slender; pedicel rather short; first funicle-joint cupuliform, very narrow at the base; funicle-joints 2-7 short, subequal, twice as wide as long; club solid, but near the base there is a slight indication of what appears to have been a division; club no wider than the funicle, twice as wide as long. Thorax one-half longer than wide; pronotum a little visible from above; mesonotum wider than long, without furrows; scutellum very large, semicircular, with a median carina; metanotum very short, unarmed. Forewings broad, without a trace of veins. Abdomen sessile; carinate on the sides; as long as the head and thorax united, and as wide as the thorax; first five segments of equal length. Legs with the femora and tibiæ stout; tarsi not as long as their tibiæ; tarsal-joints 1-4 very short, thick, transverse; last joint enlarged, as long as the other joints united.

♂. Unknown.

This anomalous genus is based on a single species reared from a mantid *ootheca*. I think that its proper position is in this subfamily, but the number of antennal joints, the veinless wings, and the peculiar tarsi render its position uncertain.

*Type*.—*Rieliomorpha mantis*, described herewith.

#### RIELIOMORPHA MANTIS, sp. nov.

♀. Head and thorax black; the abdomen is black dorsad, a little suffused with brown; ventrad it is brown; legs, including coxæ, golden-yellow; antennæ golden-yellow, the pedicel and first funicle-joint black; oral area of head yellow. Forewings long, broad, hyaline; marginal cilia very short; discal cilia fine and dense. Head, thorax, and abdomen with a dense, fine, scaly sculpture; head and thorax with a few scattered punctures. Length, 2.75 mm.

Described from eighty female specimens reared from a mantid *ootheca* found in forest, May, 1913.

*Type*.—I. 1399, South Australian Museum. A female, tagmounted, plus a slide bearing head and antennæ.

#### CREMASTOSCELIO, nov. gen.

Like *Cremastobaeus*, Ashmead, but first and second funicle-joints forming one ovate piece, and divided obliquely; club compact, 4-jointed, divided obliquely; segments of the abdomen only slightly constricted at the sutures.

*Type*.—*Cremastoscilio flavipes*, described herewith.

## CREMASTOSCELIO FLAVIPES, sp. nov.

♀. Head and thorax black; abdomen suffused with brown; legs, including coxæ, golden-yellow; antennal scape and club black; pedicel and first funicle-joint golden-yellow; rest of funicle suffused with black. Head and thorax finely sculptured; abdomen pubescent. Antennæ 12-jointed; scape long and slender; pedicel twice as long as wide; first and second funicle-joints subequal, together slightly longer than the pedicel; third and fourth subequal, each almost as long as first and second together; fifth a little shorter than fourth; last funicle-joint a little widened, distinctly wider than long; club compact, divided obliquely, much wider than the funicle. Mesonotum without furrows. Forewings when closed extending to tip of abdomen; broad, paddle-shaped; hyaline; marginal cilia short; discal cilia fine, in about twenty-five rows; submarginal vein attaining the costa at one-half wing length; marginal vein short; stigmal vein rather short, very oblique, curved caudad; postmarginal vein very long. Abdomen wholly striate; as wide as the thorax; as long as the head and thorax united; segments of equal length. Length, 1.25 mm.

Described from three female specimens caught while sweeping on edge of jungle, May, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1400, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewings.

## CREMASTOSCELIO AUREUS, sp. nov.

♀. Head black; thorax golden-yellow; abdomen golden-yellow, the apex dusky; legs golden-yellow; antennal scape suffused with black; pedicel and funicle-joints yellow; club black. The same as *flavipes*, but discal cilia more dense, in about forty rows. Length, 1.35 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 18, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1401, South Australian Museum. A female, tagmounted.

## Subfamily TELENOMINÆ.

## Table of Genera.

- |  |                              |
|--|------------------------------|
| (1) Female unknown; structure as in <i>Telenomus</i> , Haliday, but mesonotum with three furrows; post-scutellum spined ... .. | <i>Protrimerus</i> , Kieffer |
| Females; postscutellum not spined  | (2)                          |



- (2) Female antennæ 10-jointed; otherwise as in *Telenomus*, Haliday ... *Neotelenomus*, n. gen.  
 Female antennæ 11-jointed; forewings with a submarginal, marginal, stigmal, and postmarginal veins ... (3)  
 Female antennæ 12-jointed ... (6)
- (3) Head quadrate or subquadrate; abdomen much longer than wide ... *Phanurus*, Thomson  
 Head transverse; abdomen not or scarcely longer than wide ... (4)
- (4) Antennal club not wider than the funicle; otherwise as in *Telenomus*, Haliday ... *Protelenomus*, Kieffer  
 Antennal club wider than the funicle ... (5)
- (5) Mesonotum with three furrows; head very wide ... *Trissolcus*, Ashmead  
 Mesonotum with two furrows; head scarcely as wide as the thorax ... *Dissolcus*, Ashmead  
 Mesonotum without furrows; head as wide as the thorax ... *Telenomus*, Haliday
- (6) Forewings as in (3) ... (7)  
 Postmarginal vein absent; mesonotum without furrows; abdomen with a short petiole, not wider than the thorax ... *Tiphodytes*, Bradley  
 Postmarginal and stigmal veins absent; abdomen sessile, broadly oval, much wider than the thorax ... *Mirotelenomus*, n. gen.
- (7) Head circular, the frons directed dorsad; marginal vein longer than the stigmal; abdomen with a short petiole ... *Aradophagus*, Ashmead  
 Frons directed cephalad; abdomen sessile; marginal vein shorter than the stigmal; mesonotum without furrows ... *Telenomoides*, nov. gen.

### Genus PHANURUS, Thomson.

#### PHANURUS NIGER, sp. nov.

♀. Dusky-black; proximal tarsal joints pale-yellowish; venation dusky. Head subquadrate, scarcely as wide as the thorax. Antennæ 11-jointed; slender; scape equal to next four joints combined; pedicel slender, twice as long as wide; funicle-joints very small; first slightly the longest; club very slender; 5-jointed, the joints longer than wide; last joint as long as the pedicel. Thorax subquadrate, a little longer than wide. Forewings when closed extending to tip of abdomen; narrow; almost paddle-shaped; almost hyaline; longest marginal cilia equal to two-fifths greatest wing width; discal cilia very fine and dense, arranged in about eighteen lines; submarginal vein attaining the costa at almost one-half wing length; marginal vein nearly as long as the stigmal, which is

rather short, oblique; postmarginal vein as long as the submarginal. Abdomen pointed ovate; not as wide as the thorax, and no longer than head and thorax united: second segment equal to one-half length of abdomen. Length, 0.75 mm.

Described from a single specimen caught on a window, December 24, 1912.

*Hab.*—North Queensland: Nelson, *via* Cairns (A. P. Dodd).

*Type.*—I. 1402, South Australian Museum. A female on a slide.

PHANURUS GIRAULTI, sp. nov.

♀. Black; legs, including coxæ, golden-yellow; antennal scape yellow; rest of antennæ fuscous. Agreeing with *niger* in structure of head, thorax, and abdomen. Differs from *niger* in having first and second funicle-joints subequal, twice as long as wide; third slightly shorter; club 5-jointed, the joints, except the last, wider than long. Forewings rather wider than in *niger*; longest marginal cilia equal to one-fifth greatest wing width; discal cilia in about twenty-four lines. Length, 1.05 mm.

♂. Antennæ 12-jointed; scape lemon-yellow; rest of antennæ more or less suffused with black, last four joints fuscous; pedicel scarcely longer than wide; funicle-joints 1-3 subequal, distinctly longer than the pedicel; fourth a little shorter; 5-9 moniliform, subequal, as wide as long; last funicle-joint as long as first.

Described at first from a male and female specimens caught while sweeping in forest, July 10, 1912, and March 13, 1913. Subsequently other specimens were found from Nelson and Babinda.

*Hab.*—North Queensland. Nelson and Babinda, near Cairns (A. A. Girault).

*Type.*—I. 1403, South Australian Museum. Two slides bearing male and female.

PHANURUS MONTANUS, sp. nov.

♀. Very like *niger*, but forewings when closed extending distinctly beyond tip of abdomen, as wide as in *giraulti*; antennal club with joints 1-4 wider than long. Length, 0.75 mm.

Described from a single specimen labelled "On windows, December 28, 1911 (A. A. Girault)."

*Hab.*—North Queensland: Herberton, 3,000 ft.; Cairns district.

*Type.*—I. 1404, South Australian Museum. A female on a slide.

PHANURUS NELSONENSIS, sp. nov.

♀. Coal-black; antennæ fuscous; legs golden-yellow, slightly suffused with black. Differs from *niger* and *montanus* in colour; pedicel very narrow, three times as long as wide; funicle-joints all longer than wide, first the longest; club-joints all longer than wide; forewings when closed not reaching tip of abdomen, as wide as in *montanus* and *giraulti*, discal cilia in about sixteen lines only. Length, 0.80 mm.

Described from a single specimen caught while sweeping in forest, June 17, 1912.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type.*—I. 1405, South Australian Museum. A female, tagmounted.

PHANURUS LONGICORPUS, sp. nov.

♀. Colour as in *niger*; antennæ as in *nelsonensis*; forewings as in *niger*; readily distinguished from the preceding species by the long, narrow abdomen, which is distinctly longer than the head and thorax united; second segment the longest, but only one-fourth length of abdomen; forewings only reaching to one-half length of abdomen. Length, 1.25 mm.

Described from four specimens caught while sweeping in forest, January 1, 1913; February 7, 1913; and February 20, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1406, South Australian Museum. A female on a slide.

PHANURUS LONGIPENNIS, sp. nov.

♀. Agreeing with *longicarpus*, but joints of antennal club wider than long; forewings long, when closed extending to tip of abdomen; also the legs are more suffused with yellow. Length, 1.25 mm.

Described from a single specimen caught while sweeping in forest, January 14, 1913.

*Hab.*—North Queensland: Ingham, Herbert River (A. P. Dodd).

*Type.*—I. 1407, South Australian Museum. A female on a slide.

PHANURUS NIGRICORPUS, sp. nov.

♀. Coal-black; legs, including coxæ, dusky-yellow; antennal scape and pedicel dusky-yellow; rest of antennæ fuscous. Structure much as in *longicarpus* and *longipennis*, but the abdomen, although long, is not one-half longer than

head and thorax united. Antennæ with the scape equal to next five joints combined; pedicel rather slender, twice as long as wide; first funicle-joint two-thirds length of pedicel; second wider than long; third and fourth very small, wider than long; club 5-jointed: first joint very short, 2-4 a little wider than long, second the widest. Forewings not reaching apex of abdomen; broader than usual for the genus; subhyaline; venation dusky-yellow; submarginal vein attaining the costa about the middle of the wing; marginal vein short; stigmal vein long and oblique; postmarginal vein nearly twice the length of the stigmal. Length, 1.40 mm.

Described from a single specimen caught on window, January 12.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type.*—I. 1408, South Australian Museum. A female on a slide.

PHANURUS LONGICORNIS, sp. nov.

♀. Coal-black: legs (including coxæ) golden-yellow; antennæ fuscous. A slender species agreeing with *longicarpus* and *longipennis* in structure. Antennæ 11-jointed; scape rather short, no longer than next two joints combined; pedicel long and slender; funicle-joints 1.3 subequal, narrower than the pedicel, and almost as long; fourth a little shorter but twice as long as wide; club 5-jointed, slender, the joints longer than wide. Forewings almost reaching apex of abdomen; narrow; hyaline; longest marginal cilia equal to one-third greatest wing width; marginal vein nearly as long as the stigmal, which is very oblique, the end slightly curved disto-caudad; postmarginal vein very long; venation pale-yellow. Length, 1.50 mm.

Described from a single specimen caught while sweeping in forest, base of Mount Pyramid, February 13, 1912.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type.*—I. 1409, South Australian Museum. A female on a slide.

Table of the Australian species of *Phanurus*, Thomson.

Females.

- |  |     |
|--|-----|
| (1) Abdomen long and narrow; second segment only one-fourth abdominal length . . . . .             | (3) |
| Abdomen scarcely longer than head and thorax united; second segment one-half abdominal length .. . | (2) |

- (2) Dusky-black, legs mostly dusky.  
 Forewings reaching apex of abdomen; antennal club-joints 1-4 longer than wide . . . . . *niger*, Dodd  
 Forewings extending well beyond tip of abdomen; antennal club-joints 1-4 wider than long ... *montanus*, Dodd  
 Coal-black, legs yellow.  
 Antennal scape yellow, club-joints 1-4 wider than long ... *giraulti*, Dodd  
 Antennal scape fuscous, club-joints 1-4 longer than wide ... *nelsonensis*, Dodd
- (3) Dusky-black.  
 Forewings reaching to one-half abdominal length; club-joints 1-4 longer than wide ... *longicarpus*, Dodd  
 Forewings reaching apex of abdomen, club-joints 1-4 wider than long ... *longipennis*, Dodd  
 Coal-black.  
 Legs dusky-yellow; first funicle-joint of antennæ longer than wide, 2-4 wider than long ... *nigricarpus*, Dodd  
 Legs golden-yellow; all funicle-joints longer than wide ... *longicornis*, Dodd

### Genus *TELENOMUS*, Haliday.

A genus comprising nearly 200 species.

*TELENOMUS CTEATUS*, Walker, 1839, Tasmania.

*TELENOMUS JAPYX*, Walker, 1839, Western Australia.

*TELENOMUS CHARMUS*, Walker, 1839, Western Australia.

From the descriptions of these species it would be impossible to recognize them.

### *TELENOMUS ODYSSEA*, sp. nov.

♀. Dusky-black: trochanters, tibiae, and tarsi pale-yellow. Head transverse, slightly wider than the thorax. Antennæ 11-jointed; scape equal to next five joints combined; pedicel short, one-half longer than wide; funicle-joints small, first a little longer than wide; second and third as wide as long; fourth a little wider than long; club 5-jointed, first joint small, 2-4 a little wider than long. Thorax a little longer than wide, much wider than the abdomen. Forewings when closed extending well beyond tip of abdomen; hyaline; moderately broad; paddle-shaped; longest marginal cilia equal to one-sixth greatest wing width; discal cilia fine, dense, in about twenty-four rows; venation fuscous; submarginal vein attaining the costa about the middle of the wing; marginal vein one-half length of the stigmal; postmarginal fully twice as long as the stigmal. Abdomen no longer than the

thorax and not as wide. Tarsi longer than their tibiae; basal joint of posterior tarsi three times length of second. Length, 0.80 mm.

Described from a single specimen captured while sweeping in forest, September 3, 1912

*Hab*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type*.—I. 1410, South Australian Museum. A female on a slide.

TELENOMUS GEAGRUS, sp. nov.

♀. Dusky-black: legs and antennal scape pale lemon-yellow: cephalic coxae dusky; antennal pedicel, funicle, and club fuscous. Antennae as in *odyssea*, but the pedicel is twice as long as wide. Forewing as in *odyssea*, but submarginal vein attaining the costa distinctly before the middle of the wing; venation pale-yellow. Basal joint of posterior tarsi twice the length of the second. Length, 0.80 mm.

Described from a single specimen caught while sweeping jungle on edge of streamlet; height, 500 ft; October 28, 1911. Also female on edge of jungle, Kuranda, May 18, 1913 (A. P. Dodd).

*Hab*.—North Queensland: Babinda, 36 miles south of Cairns (A. A. Girault).

*Type*.—I. 1411, South Australian Museum. A female on a slide.

TELENOMUS OECLEUS, sp. nov.

♀. Coal-black: legs (excluding coxae) and first six antennal joints golden-yellow; coxae black. Head very transverse, a little wider than the thorax: ocelli large, wide apart, the lateral ones close to the eye margins; head rugulose. Antennae 11-jointed; scape long and slender, equal to next five joints combined; pedicel twice as long as wide; first funicle-joint a little longer than the pedicel, cupuliform; second one-half length of first, as wide as long; third shorter, twice as wide as long; club 6-jointed, first joint short; second the largest, longer than wide: the others, except the last, wider than long. Thorax a little longer than wide; rugulose. Forewings extending well beyond apex of abdomen; very broad: hyaline; marginal cilia very short: discal cilia moderately coarse, arranged in about forty rows; venation pale-yellow; submarginal vein attaining the costa about the middle of the wing; marginal vein short; stigmal vein long, the blade very narrow, with a distinct knob, four times as long as the marginal; postmarginal vein one-half longer than the stigmal. Abdomen broadly oval; scarcely as wide as the thorax and no longer; first and most of second segment striate;

second segment equal to two-thirds abdominal length. Length, 1.60 mm.

♂. Antennæ 12-jointed; scape yellow; next five joints slightly suffused with brown; last six joints nearly wholly fuscous, very slightly suffused with yellow; pedicel short and stout; first funicle-joint much longer than pedicel, twice as long as wide; second a little shorter than first; third a little shorter than second; remaining joints subequal, moniliform, a little shorter than third, but last funicle-joint as long as third.

Described from five male and two female specimens received from Mr. F. P. Dodd, of Kuranda, and labelled "From pentatomid eggs, Kuranda, September 3, 1907." Also two females caught while sweeping on edge of jungle, Kuranda, December 20, 1912 (A. P. Dodd), and one female caught while sweeping in jungle, May 9, 1913 (A. P. Dodd).

*Hab.*—North Queensland: Nelson and Kuranda, near Cairns.

*Type.*—I. 1412, South Australian Museum. A male and female, tagmounted, plus two slides bearing male and female antennæ and forewings.

TELENOMUS ŒDIPUS, sp. nov.

♀. Coal-black; legs (excluding coxæ) reddish-yellow, suffused with brown; coxæ black; antennal scape reddish-yellow. Antennæ with the scape long; pedicel rather long, nearly twice as long as wide; first funicle-joint narrower than pedicel and not quite so long; second as wide as long; third wider than long; club 6-jointed; first joint small; joints 2-5 much wider than long, second the widest and longest. Forewings long; infuscated; paddle-shaped, but not as broad as in *æcleus*; marginal cilia short; discal cilia very fine and dense, in about thirty rows; venation brown; venation as in *æcleus*, but the postmarginal vein is twice as long as the stigmal. Length, 1.10 mm.

♂. Unknown.

Described from four specimens received from the South Australian Museum and labelled "Hobart, Tasmania; A. M. Lea."

*Hab.*—Tasmania: Hobart.

*Type.*—I. 1413, South Australian Museum. A female on a slide, plus three females tagmounted.

TELENOMUS CENEUS, sp. nov.

♀. Coal-black; legs (including coxæ) reddish-yellow, suffused with brown; antennal scape reddish-yellow. Structure as in *æcleus*, but only the first third of second abdominal

segment is striate, and the abdomen is as wide as the thorax. Antennæ as in *æcleus*, but the pedicel is very slender, three times as long as wide; first funicle-joint a little longer than the pedicel; second a little longer than wide. Forewings as in *æcleus*, but they are infuscated; discal cilia very fine, in about thirty rows; marginal vein one-third as long as the very long stigmal. Length, 1.60 mm.

Described from a single specimen received from the South Australian Museum and labelled 'King Island, Tas.: A. M. Lea.'

*Hab.*—Tasmania: King Island, Bass Strait.

*Type.*—I. 1414, South Australian Museum. A female, tagmounted, plus a slide bearing female antennæ and forewing.

TELFNOMUS CENONE, sp. nov.

♀. Coal-black: legs (excluding coxæ) reddish-yellow, suffused with brown; antennal scape reddish-yellow; coxæ black. Structure as in *æcleus*, but second abdominal segment only equal to one-half abdominal length; first and most of second segment striate. Antennæ as in *æcleus*, but the pedicel and first funicle-joints are shorter, twice as long as wide. Forewings rather short; paddle-shaped; hyaline; marginal cilia moderately long; discal cilia fine and dense in about thirty-six rows; venation brown; submarginal vein attaining the costa distinctly before the middle of the wing; marginal vein one-half as long as the very long paddle-shaped stigmal vein; post-marginal vein nearly twice as long as the stigmal. Basal joint of posterior tarsi twice as long as the second. Length, 1 mm.

Described from a single specimen received from the South Australian Museum and labelled "Cairns district; A. M. Lea." Subsequently other specimens were found from Proserpine and Ingham (A. A. Girault).

*Hab.*—North Queensland: Cairns district; Proserpine, near Bowen; Ingham, Herbert River.

*Type.*—I. 1415, South Australian Museum. A female, tagmounted, plus a slide bearing female antennæ and forewing.

TELENOMUS CENOPION, sp. nov.

♀. Very similar to *ænone*, but the abdomen is wholly striate and the forewings are distinctly broader. Length, 1.10 mm.

Described from a single specimen labelled "From foliage of lemon-tree, October 6, 1911: A. A. Girault."

*Hab.*—South Queensland: Roma.

*Type.*—I. 1416, South Australian Museum. A slide bearing female forewing and antennæ.



## TELENOMUS OGYGES, sp. nov.

♀. Coal-black; tibiae and tarsi yellow, suffused with black. Like *anone*, but differs in colour; the first funicle joint is scarcely as long as the pedicel, and the venation is very distinct. Length, 1 mm.

Described from several specimens caught while sweeping along Cape River, January 13.

*Hab.*—North Queensland: Pentland, 200 miles west of Townsville (A. A. Girault).

*Type.*—I. 1417, South Australian Museum. Three females on a slide.

## TELENOMUS OLYMPUS, sp. nov.

♀. Coal-black; legs (excluding coxae) and first six antennal joints pale-yellow; coxae black; antennal club brown. Forewings almost as in *anone*, but submarginal vein attaining the costa about the middle of the wing; postmarginal vein scarcely longer than the stigmal. Antennae with the scape equal to next three joints combined; pedicel slender, fully twice as long as wide; first funicle-joint a little shorter and narrower than the pedicel; second slightly shorter than first, not twice as long as wide; third as wide as long; fourth a little wider than long; club 5-jointed, joints 2-4 only slightly wider than long. Length, 1 mm.

Described from a single specimen caught while sweeping on edge of jungle, April 5, 1913. Also one female on edge of jungle, Kuranda, May 18, 1913.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1418, South Australian Museum. A female on a slide.

## TELENOMUS OMPHALE, sp. nov.

♀. Coal-black; legs (excluding coxae) and first seven antennal joints reddish-yellow; coxae black. Head rugulose; ocelli very large, lateral ones close to the eye margins; thorax scarcely longer than wide, reticulately rugulose; abdomen nearly as wide as the thorax, and scarcely longer; second segment very large; first and second segments striate. Antennae as in *olympus*, but pedicel nearly three times as long as wide; first funicle-joint as long as the pedicel; 2-4 diminishing in length, fourth as wide as long; club 5-jointed; second joint the longest and widest. Forewings long, very broad, hyaline; almost as in *aeleus*; submarginal vein attaining the costa distinctly before the middle of the wing; marginal vein two-fifths as long as the stigmal, which is very long, oblique, the end curved distad; postmarginal vein a little longer than the stigmal; venation pale-yellow. Length, 2 mm.; very large for the genus.

Described from a single specimen reared from pentatomid eggs in forest, April 13.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1419, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

TELENOMUS OPHION, sp. nov.

♀. Coal-black; legs (excluding coxæ) and antennal scape golden-yellow. Antennæ with scape equal to next four joints combined: pedicel twice as long as wide; first funicle-joint as long as the pedicel: others gradually diminishing in length; fourth wider than long; club 5-jointed, first joint small, first and second wider than long, 3-5 longer than wide. Forewings extending well beyond tip of abdomen; broad; hyaline; marginal cilia rather long, longest equal to one-fifth greatest wing width; discal cilia moderately fine, in about thirty rows; submarginal vein attaining the costa before the middle of the wing; marginal vein one-third as long as the rather long stigmal vein; postmarginal vein twice as long as the stigmal. Abdomen with first and part of second segment striate. Length, 1 mm.

♂. Antennæ 12-jointed, the scape yellow; pedicel short and stout: first and second funicle-joints subequal, twice as long as wide, longer than pedicel; third a little shorter; 4-9 subequal, moniliform; last funicle-joint as long as first and second.

Described from a specimen of each sex bred from pentatomid eggs, May, 1912 (A. A. Girault). Also male on edge of jungle, Kuranda, May 18, 1913 (A.P. Dodd).

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1420, South Australian Museum. A slide bearing male and female head, antennæ, and forewings, plus a male tagmounted.

TELENOMUS ORESTES, sp. nov.

♂. Coal-black; coxæ, trochanters, and femora brown; tibiæ and tarsi yellow; antennæ fuscous. Antennæ 12-jointed; pedicel rather short, a little longer than wide; first funicle-joint as long as pedicel; funicle-joints 2-9 subequal, shorter than first, a little wider than long; last joint a little longer than pedicel. Forewings much as in *ophion*; submarginal vein attaining the costa about the middle of the wing; marginal vein as long as the stigmal, which is rather short; postmarginal vein almost three times as long as the stigmal; venation brown; marginal cilia moderately short; discal cilia in about twenty-five rows. Length, 1 mm.

Described from a single specimen caught on window; height, 3,000 ft.: December 28, 1911.

*Hab.*—North Queensland: Herberton, Cairns district (A. A. Girault).

*Type.*—I. 1421, South Australian Museum. A male on a slide.

Table of Australian species of *Telenomus*, Haliday.

- Male; marginal vein as long as the stigmal ... .. *orestes*, Dodd
- Females; marginal vein shorter than the stigmal.
- (1) Antennal club 5-jointed, wings hyaline.
- (a) First six antennal joints pale-yellow ... .. *olympus*, Dodd
- (b) First seven antennal joints reddish-yellow ... .. *amphale*, Dodd
- (c) Antennal scape yellow.
- Intermediate and posterior coxæ yellow ... .. *aquius*, Dodd
- All coxæ black ... .. *ophion*, Dodd
- (d) All antennæ fuscous ... .. *odyssea*, Dodd
- (2) Antennal club 6-jointed
- (a) First six antennal joints golden-yellow ... .. *acelus*, Dodd
- (b) Antennal scape alone yellow.
- (1) Forewings infuscated.
- Coxæ reddish-yellow; first funicle-joint longer than the pedicel ... .. *aneus*, Dodd
- Coxæ black; first funicle-joint shorter than the pedicel ... .. *ædipus*, Dodd
- (2) Forewings hyaline.
- Abdomen wholly striate ... .. *ænopion*, Dodd
- Abdomen partly striate ... .. *ænone*, Dodd
- (c) All antennæ black ... .. *ogyges*, Dodd

TELENOMOIDES, nov. gen.

The same as *Telenomus*, but female antennæ 12-jointed; mandibles bi- or tridentate; submarginal vein sometimes curving slightly downwards before joining the margin.

*Type.*—The following species.

TELENOMOIDES FLAVIPES, sp. nov.

♀. Coal-black; legs (including coxæ) golden-yellow; antennal scape golden-yellow. Antennæ 12-jointed; scape as long as next five joints combined; pedicel rather long, twice as long as wide; first funicle-joint a little shorter and narrower than the pedicel; second small, as wide as long; third wider than long; fourth very small, twice as wide as long; club 6-jointed: joints 1-5 much wider than long, second the widest and longest. Forewings long; broad; hyaline; marginal

cilia short; discal cilia rather coarse, in about thirty rows; submarginal vein attaining the costa about the middle of the wing; marginal vein nearly as long as the stigmal, which is rather short; postmarginal vein twice as long as the stigmal; venation brown. Length, 1 mm.

A common species in forest country.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1422, South Australian Museum. A female on a slide.

*TELENOMOIDES GIRAULTI*, sp. nov.

♀. Like *flavipes*, but antennal scape slightly suffused yellow; forewings with finer discal cilia; marginal vein only one-third as long as the stigmal. Length, 1 mm.

Described from a single specimen caught while sweeping grass, March 12, 1912.

*Hab.*—North Queensland: Thursday Island, Torres Strait.

*Type.*—I. 1423, South Australian Museum. A slide bearing forewing and antenna.

*TELENOMOIDES BICOLOR*, sp. nov.

♀. Differs from *flavipes* only in having the abdomen dark-brown, not black. Length, 1 mm.

Described from several specimens caught while sweeping in forest, 1912.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1424, South Australian Museum. A female on a slide.

*TELENOMOIDES ANGUSTIPENNIS*, sp. nov.

♀. Brown-black; legs (excluding coxæ) and antennal scape golden-yellow. Like *flavipes*, but first two joints of antennal club very short; forewings much narrower, not paddle-shaped, the apex very rounded, infuscated; marginal cilia long, the longest equal to one-half greatest wing width; discal cilia very fine and dense; submarginal vein curving slightly downwards before joining the costa; marginal vein very short; stigmal vein rather short, very oblique; post-marginal vein very long. Length, 1 mm.

Described from a single specimen caught while sweeping in open fields, February 4, 1912.

*Hab.*—North Queensland: Cooktown (A. A. Girault).

*Type.*—I. 1425, South Australian Museum. A female on a slide.

*TELENOMOIDES INSULARIS*, sp. nov.

♀. Like *angustipennis*, but colour coal-black, forewings broader, not so much infuscated, with a dark spot involving all the stigmal vein, marginal cilia not so long, longest equal to one-sixth greatest wing width. Length, 1 mm.

Described from a single specimen caught while sweeping a mile from the mainland, December 25, 1911.

*Hab.*—North Queensland: Double Island, near Cairns (A. A. Girault).

*Type.*—J. 1426, South Australian Museum. A female on a slide.

*TELENOMOIDES NIGRICOXA*, sp. nov.

♀. Coal-black: legs (excluding coxæ) and antennal scape reddish-yellow: coxæ black. Differs from *flavipes* in having the funicle-joints as wide as the pedicel: first funicle-joint a little longer than the pedicel; second as long as the pedicel: third shorter, a little longer than wide; fourth wider than long; club 6-jointed, first joint rather larger than in *flavipes*. Forewings shaped as in *flavipes*, but venation as in *angustipennis*, but marginal vein one-half as long as the stigmal, which is not so oblique, postmarginal only twice as long as the stigmal. Length, 1.45 mm.

Described from two specimens caught while sweeping in jungle, May 8, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1427, South Australian Museum. A female on a slide.

*TELENOMOIDES NIGRICORNIS*, sp. nov.

♀. Coal-black: tibiæ and tarsi suffused with yellow. Antennæ as in *flavipes*; forewings as in *flavipes*, but marginal vein one-fourth as long as the stigmal. Length, 0.90 mm.

Described from several specimens caught in the forest, Nelson, 1913. Also a female caught while sweeping, Pentland, 200 miles west of Townsville.

*Hab.*—North Queensland: Nelson, near Cairns; Pentland.

*Type.*—I. 1428, South Australian Museum. A female on a slide.

Table of the species of *Telenomoides*, Dodd.

- (1) Submarginal vein straight, not curving downwards before joining the margin: forewings hyaline, paddle-shaped; broad.

(a) All legs yellow.

Coal-black, discal cilia rather coarse, marginal vein nearly as long as the stigmal ... *flavipes*, Dodd

Discal cilia very fine, marginal vein one-third as long as the stigmal ... *giraulti*, Dodd

Abdomen dark-brown, otherwise as in *flavipes* ... *bicolor*, Dodd

- (h) Coxæ, femora, and trochanters black, marginal vein one-fourth as long as the stigmal . . . . . *nigricornis*. Dodd
- (2) Submarginal vein curving downwards before joining the margin: legs. except coxæ, yellow.
- (a) Forewings narrow, the apex much rounded, infuscated, postmarginal vein very long.
- Infuscation the same over the wing area, longest marginal cilia equal to one-half greatest wing width . . . . . *angustipennis*, Dodd
- Infuscation patchy, longest marginal cilia equal to one-sixth greatest wing width . . . . . *insularis*, Dodd
- (b) Forewings broad, paddle-shaped, the apex nearly square; hyaline; postmarginal vein only twice as long as the stigmal . . . . . *nigricoxa*. Dodd

#### NEOTELENOMUS, nov. gen.

The same as *Telenomus*, Haliday, but female antennæ only 10-jointed.

*Type*.—The following species.

#### NEOTELENOMUS ANTHERÆ, sp. nov.

♀. Coal-black: trochanters, tibiæ, and tarsi golden-yellow. Antennæ 10-jointed: pedicel rather slender, twice as long as wide: first funicle-joint a little shorter than the pedicel; second as wide as long; third wider than long; club 5-jointed; joints 1-4 much wider than long; second the longest and widest. Forewings moderately broad, extending well beyond tip of abdomen; hyaline; marginal cilia rather short; discal cilia in about thirty lines; venation fuscous; submarginal vein attaining the costa about the middle of the wing; marginal vein one-third as long as the stigmal, which is moderately long; postmarginal vein twice as long as the stigmal. Basal joint of posterior tarsi three times as long as second joint. Length, 1 mm.

♂. Antennæ 12-jointed: pedicel and first funicle-joint scarcely longer than wide: second funicle-joint a little longer: third longer than second, dilated on the side; 4-9 small, subequal, moniliform, much wider than long: last funicle-joint as long as second. Length, 0.80 mm.

Described from one male and nine female specimens reared from a single egg of the saturnid moth, *Antheraea janetta*, May 13.

*Hab*.—North Queensland: Nelson, near Cairns.

*Type*.—I. 1429, South Australian Museum. A slide bearing two females and one male.

## NEOTELENOMUS OVIVORUS, sp. nov.

♀. Coal-black: legs (except cephalic coxæ) lemon-yellow: antennal scape lemon-yellow, next four joints suffused with yellow. Like *anthereæ*, but submarginal vein attaining the costa before the middle of the wing. Length, 1 mm.

♂. Antennal scape lemon-yellow: rest of antennæ dusky, suffused with yellow. Differs from *anthereæ* in having second and third funicle-joints subequal, a little shorter than first, third not dilated on the side.

Described from six female and seven male specimens bred from eggs of an unknown moth, May 13. A single parasite issued from each egg.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1430, South Australian Museum. A male and female on a slide.

## NEOTELENOMUS LEAI, sp. nov.

♀. Coal-black: tibiæ and tarsi yellow, suffused with brown. Antennæ as in *anthereæ*, but first funicle-joint as long as the pedicel. Forewings as in *anthereæ*, but they are infuscated, submarginal vein attaining the costa before the middle of the wing, stigmal vein very long. Length, 1 mm.

Described from a single specimen received from the South Australian Museum and labelled "King Island, Tasmania; Lea."

*Hab.*—Tasmania: King Island, Bass Strait.

*Type.*—I. 1431, South Australian Museum. A female on a slide.

## NEOTELENOMUS NIGER, sp. nov.

♀. Like *anthereæ*, but marginal vein two-thirds as long as the stigmal. Length, 1 mm.

Described from thirty-six specimens cardmounted and labelled "Kuranda, March, 1904; F. P. Dodd." On the same cards were a few *Encyrtids*: both parasites were probably bred from moth eggs.

*Hab.*—North Queensland: Kuranda, near Cairns.

*Type.*—I. 1432, South Australian Museum. A female on a slide, plus twelve females on a card.

## NEOTELENOMUS MINIMUS, sp. nov.

♀. Fuscous: legs (except coxæ) yellow, suffused with brown. Antennæ as in *anthereæ*, but first funicle-joint only one-half length of the pedicel; first club-joint very small. Forewings scarcely reaching apex of abdomen; moderately narrow; hyaline; marginal cilia moderately long, the longest equal to one-fourth greatest wing width; discal cilia in

about twenty rows: venation as in *niger*. Length, 0.75 mm.

Described from a single specimen caught on a window, December 27, 1912.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1433, South Australian Museum. A female on a slide.

Table of the species of *Neotelenomus*, Dodd.

- |   |                        |
|---|------------------------|
| (1) Forewings infuscated; tibiae and tarsi yellow; stigmal vein very long | <i>leui</i> , Dodd     |
| (2) Forewings hyaline; stigmal vein moderately short.                     |                        |
| (a) Shining-black, forewings long and broad.                              |                        |
| (1) Legs (except cephalic coxae) yellow; antennal scape yellow ... ..     | <i>ovivorus</i> , Dodd |
| (2) Coxae and femora black, antennal scape black.                         |                        |
| Marginal vein one-third as long as stigmal ..                             | <i>anthereæ</i> , Dodd |
| Marginal vein two-thirds as long as stigmal ...                           | <i>niger</i> , Dodd    |
| (b) Fuscous, forewings short and rather narrow.                           |                        |
| Legs (except coxae) yellow suffused with brown .. ..                      | <i>minimus</i> , Dodd  |

#### MIROTELENOMUS, nov. gen.

♀. Head transverse, wider than the thorax; eyes rather large, bare; ocelli situated wide apart, the lateral ones near the eye margins; mandibles bidentate. Antennæ 12-jointed; short; scape long and slender; pedicel short; funicle-joints small, all wider than long, the last a little widened; club slender, 5-jointed. Thorax subquadrate; a little wider than long; pronotum not visible from above; mesonotum without furrows; scutellum large, semicircular. Forewings short, broad, with long marginal cilia; submarginal vein short; thickened, joining the margin at one-fourth wing length; marginal vein short, thickened; postmarginal and stigmal veins absent. Abdomen broadly oval; sessile; much wider than the thorax; longer than head and thorax united; scarcely longer than wide; first segment as wide as the metathorax; depressed at the base; second segment the longest, but only equal to one-third abdominal length.

#### MIROTELENOMUS ABNORMIS, sp. nov.

♀. Shining-black; the legs and antennal scape reddish-yellow. Forewings when closed not reaching apex of abdomen; first third of wing hyaline, the rest much infuscated; longest marginal cilia equal to one-third greatest wing width; discal cilia very fine and dense. Length, 1.10 mm.



Described from a single specimen received from the South Australian Museum and labelled "Dalby, Queensland: Mrs. F. H. Hobbler."

*Hab.*—Queensland: Dalby.

*Type.*—I. 1434, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewing.

## ADDENDA.

Subfamily SCELIONINÆ.

Genus CERATOTELEIA, Kieffer.

CERATOTELEIA GLORIOSA, sp. nov.

♀. Head black; pro- and mesothorax beautiful reddish-yellow; metathorax and abdomen black; legs, scape, pedicel, and first three funicle-joints golden-yellow; last funicle-joint and club black. Antennæ as in *pulchra*. Forewings narrow, almost as in *pulchra*, but postmarginal vein is almost twice as long as the stigmal. Mesonotum without furrows; ovipositor exerted for fully the length of the abdomen; basal segment of abdomen with a horn. This species appears to be intermediate between the group containing *splendida*, *pulchra*, and *magnifica* and that containing *flava*, *brunnea*, and *bella*, for while the stigmal vein is not very oblique, the postmarginal is nearly twice as long as the stigmal. Length, 1.90 mm.

Described from a single specimen caught while sweeping in jungle, May 8, 1913

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1435, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

CERATOTELEIA VENUSTA, sp. nov.

♀. The same as *bella*, but ovipositor not exerted. In describing the other species I have not mentioned this character. In *splendida*, *pulchra*, *gloriosa*, and *bella* the ovipositor is exerted for fully the length of the abdomen; in *eximia* it is slightly exerted, while in *flava*, *fasciata*, and *venusta* it is not exerted. Length, 1.75 mm.

Described from a single specimen captured with *gloriosa*.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1436, South Australian Museum. A female, tagmounted.

CERATOTELEIA SUPERBA, sp. nov.

♂. Very similar to *magnifica*, but the head is reddish-yellow, the eyes and ocelli being black; also the stigmal vein is not curved. Length, 2.75 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 20, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1437, South Australian Museum. A male, tagmounted, plus a slide bearing antenna and forewings.

CERATOTELEIA INORNATA, Dodd.

I have recently captured a pair of this species by sweeping foliage in a jungle, Nelson, North Queensland, May 8, 1913. Since the original description was taken from a specimen on a slide, I herewith give a correct description.

♂. Black, a little suffused with brown, the brown being visible as a lighter-coloured patch in the centre of the abdomen: all legs and antennal scape golden-yellow. Antennæ and forewings as in the original description. Mesonotum with parapsidal furrows: abdomen long and narrow, as long as head and thorax united, no wider than the thorax, wholly longitudinally striate. Length, 2 mm.

♀. Basal segment of abdomen with a raised tubercle, ovipositor not exerted. Antennæ as in *brunnea*.

*Hab.*—North Queensland: Nelson, near Cairns.

*Type.*—I. 1375, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ, head, and forewing.

CERATOTELEIA NIGRA, sp. nov.

♀. Black; legs and antennal scape reddish-yellow, suffused with brown. Antennæ as in *flava*, but third club-joint slightly the longest and widest. Forewings long; narrow; infuscated; marginal cilia very short; discal cilia fine and dense; submarginal vein attaining the costa about the middle of the wing; marginal vein two-thirds as long as the stigmal, which is very oblique; postmarginal vein slightly longer than the stigmal; basal vein indistinct. Mesonotum without parapsidal furrows. Abdomen as long as head and thorax united, wider than the thorax: first and second segments striate: basal segment with a horn; ovipositor not exerted. Length, 2.60 mm.

Described from a single specimen caught while sweeping jungle, Goondi, near Innisfail, July, 1912. Later females were found from Proserpine, near Bowen, and Ingham.

*Hab.*—North Queensland: Goondi, near Innisfail; Ingham: Proserpine (A. A. Girault).

*Type.*—I. 1438, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewing.

## CERATOTELEIA FUSCA, sp. nov.

♀. Like *nigra*, but first funicle-joint of antennæ a little shorter than the pedicel: second one-half length of first; stigmal vein not very oblique, longer than in *nigra*. Ovipositor not exerted. Length, 2.30 mm.

Described from a single specimen caught on window of a wool store, October, 1911.

*Hab.*—Queensland: Brisbane (A. A. Girault)

*Type.*—I 1439, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings

## Genus BÆONEURA, Foerster.

## BÆONEURA GIRAULTI, sp. nov

♀. Head and thorax black; abdomen and legs, including coxæ, golden-yellow; antennal scape, pedicel, and funicle-joints honey-yellow; club light-brown. Head transverse; polished: as wide as the thorax. Antennæ 12-jointed; scape slender; pedicel twice as long as wide; funicle-joints minute, much narrower and shorter than the pedicel; club 5-jointed, first joint small: 2-4 large: last joint very small, scarcely visible. Thorax subquadrate, scarcely longer than wide; polished; mesonotum smooth, with a median carina; scutellum rather short. Forewings when closed extending to tip of abdomen; very narrow; hyaline: marginal cilia very long, the longest fully twice the greatest wing width; submarginal vein terminating before the middle of the wing. Abdomen fusiform; as wide as the thorax: twice as long as head and thorax combined; first segment short: second and third the longest and widest segments. Length, 1.10 mm.

Described from a single female specimen caught while sweeping foliage and grass in forest, January 4, 1913 (A. A. Girault). This curious little genus contains but one other species, *B. bicolor*, Ashmead, from North America. I have much pleasure in naming the species in honour of Mr. A. A. Girault for his kindness in assisting me in my work on the *Proctotrypoidæ*, and for the numerous species he has collected.

*Hab.*—North Queensland: Pentland, 200 miles west of Townsville.

*Type.*—I. 1440, South Australian Museum. A female on a slide.

## Genus HOPLOTELEIA, Ashmead.

## HOPLOTELEIA GRANDIS, sp. nov.

Shining-black; legs (including coxæ) reddish-yellow. Thorax two-thirds longer than wide; pronotum, mesonotum, and scutellum with large circular punctures. These punctures are not arranged regularly, some having their margins touching,

others being distant from each other by more than their own diameter; the spaces between the punctures are very finely sculptured; parapsidal furrows deep and distinct, median furrow partly obliterated; scutellum with a median carina; centre of thorax ventrad, the punctures are much smaller and sparser; metathorax rugulose. Abdomen one-half longer than the thorax, and not as wide; apex truncate, bispinose, the spines short; wholly longitudinally rugulose: first segment twice as wide as long; second one-half longer than first; third as long as second; fourth a little shorter; fifth a little shorter than fourth; sixth shorter than fifth, with a few scattered punctures; ventrad the abdomen is reticulately rugulose. Length, 4 mm.

The single specimen on which this species is based was minus head, wings, and most of the legs. It had probably been shaken from a spider's web.

Described from a single specimen caught while sweeping foliage in jungle, May 8, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1441, South Australian Museum. A specimen, tagmounted.

*HOPLOTELEIA ACUMINATA*, sp. nov.

♂. Shining-black; legs reddish-yellow; antennal scape reddish-yellow; remaining joints becoming suffused with black towards the apex. Like *pulchricornis*, but lateral ocelli separated from each other by only their own diameter, twice their own diameter in *pulchricornis*; the very wide, shorter mesonotum and the abdomen being narrower than the thorax, forewings slightly infuscated, stigmal vein curved slightly caudad. Differs from *australica*, *insularis*, and *nigricornis* in having the mesonotum uniformly rugulose, like the head; and the pointed abdomen. Length, 3.50 mm.

Described from a single specimen caught while sweeping foliage on edge of jungle, May 19, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1442, South Australian Museum. A male, tagmounted, plus a slide bearing antennæ and forewing.

Genus *PARIDRIS*, Kieffer.

*PARIDRIS RUFINOTUM*, sp. nov.

♀. Head, abdomen, scutellum, and antennal club black; thorax, except scutellum, reddish-brown; legs, antennal scape, pedicel, and funicle-joints golden-yellow. Antennæ as in *queenslandica* and *tridentata*. Forewings as in *queenslandica*, but discal ciliation rather sparse. Mesonotum with two furrows. Length, 1.40 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 18, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1443, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewing.

Genus *OPISTHACANTHA*, Ashmead.

*OPISTHACANTHA UNICOLOR*, sp. nov.

♀. Black: trochanters, tibiae, and tarsi suffused with yellow. As in *nigriceps*, but forewings almost hyaline, postmarginal vein only twice as long as the stigmal. Abdomen with first, second, and most of third segments striate. Length, 1.40 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 18, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1444, South Australian Museum. A female on a slide.

Genus *MACROTELEIA*, Westwood.

*MACROTELEIA CORNUTA*, sp. nov.

♀. Black: legs (including coxæ) golden-yellow; antennal scape, pedicel, and funicle-joints suffused with yellow. Like *magna*, but second funicle-joint a little longer than first; third shorter than second: fourth shorter than third, but distinctly longer than wide; club 6-jointed, third joint slightly the longest and widest. Stigmal vein very oblique, the apex curved caudad. Head and thorax smooth, with only a few scattered punctures. Abdomen with a horn on the basal segment. Parapsidal furrows distinct. Length, 4.25 mm.

Described from a single specimen caught while sweeping foliage in a jungle, May 25, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type.*—I. 1445, South Australian Museum. A female, tagmounted, plus a slide bearing forewings and antennæ.

Genus *HADRONOTUS*, Foerster.

*HADRONOTUS NIGRICLAVATUS*, sp. nov.

♀. Coal-black: legs (except cephalic coxæ) reddish-yellow; cephalic femora suffused with brown; first six antennal joints reddish-yellow. Structure of head, thorax, and abdomen as in *pentatomus*, but first segment of abdomen slightly the longest segment. Antennæ much as in *pentatomus*. In describing *pentatomus* I gave the funicle as 4-jointed, the club-

6-jointed: however, I think the club is really 8-jointed, the transverse third and fourth funicle-joints belonging to the club. In *nigriclavatus* the first funicle-joint is distinctly longer than the pedicel, first and second club-joints scarcely wider than long. Forewings as in *pentatomus*, but they are a little infuscated, marginal vein one-half as long as the stigmal. Length, 2.25 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 18, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1446, South Australian Museum. A slide bearing female antennæ and forewing.

*HADRONOTUS NIGRICOXÆ*, sp. nov.

♀. Coal-black: legs (except coxæ) reddish-yellow: cephalic femora suffused with black: first seven antennal joints reddish-yellow. Like *nigriclavatus*, but first funicle-joint no longer than the pedicel, third and fourth funicle-joints not forming part of the club: club 6-jointed, second joint distinctly the longest and widest. Abdomen with second segment the longest. Length, 1.60 mm.

Described from single specimen caught while sweeping on edge of jungle, May 19, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1447, South Australian Museum. A female, tagmounted, plus a slide bearing antennæ and forewings.

*HADRONOTUS SPLENDIDUS*, sp. nov.

♀. Head black: thorax deep brownish-yellow, the scutellum and centre of mesonotum darker: basal half of abdomen brownish-yellow, apical half darker: legs and antennal scape golden-yellow; rest of antennæ fuscous. Head and thorax finely sculptured; first and second abdominal segments striate. Antennæ 12-jointed: pedicel one-half longer than wide: first funicle-joint as long as the pedicel: second as wide as long: third and fourth wider than long: club 6-jointed, joints 1-5 fully twice as wide as long. Forewings when closed extending beyond tip of abdomen; broad; hyaline: marginal cilia very short; submarginal vein curving downwards before joining the costa, which it joins about the middle of the wing; marginal vein very short; stigmal vein moderately short, very oblique; postmarginal vein nearly twice as long as the stigmal. Length, 1.25 mm.

Described from a single specimen caught while sweeping in forest, summit of Mount Pyramid (3,000 ft.), February 15,

1912 (A. A. Girault). Subsequently a female was caught while sweeping on edge of jungle, May 26, 1913 (A. P. Dodd).

*Hab.*—North Queensland: Mount Pyramid (3,000 ft.) and Nelson, near Cairns.

*Type.*—I. 1448, South Australian Museum. A female, tagmounted, plus a slide bearing head, antennæ, and forewings.

### Subfamily TELENOMINÆ.

#### Genus TELENOMUS, Haliday.

##### TELENOMUS OREAS, sp. nov.

♀. Coal-black; legs (except coxæ) and antennal scape reddish-yellow. Like *anone*, but first funicle-joint of antennæ a little shorter than the pedicel; forewings with the submarginal vein attaining the costa about the middle of the wing, marginal vein almost punctiform; stigmal vein more oblique, not paddle-shaped, the blade of uniform thickness. Length, 1.10 mm.

Described from two specimens caught while sweeping in jungle, May 15, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

*Type.*—I. 1449, South Australian Museum. A female on a slide.

##### TELENOMUS OSIRIS, sp. nov.

♀. Like *ophion*, but all coxæ lemon-yellow, pedicel of antennæ suffused with yellow; first club-joint large, the largest of the club. Length, 1 mm.

Described from a single specimen caught while sweeping foliage and grass in forest and jungle, September 3, 1912.

*Hab.*—North Queensland: Nelson, near Cairns (A. A. Girault).

*Type.*—I. 1450, South Australian Museum. A female on a slide.

##### TELENOMUS ORITHYIA, sp. nov.

♀. Black; legs (except cephalic coxæ) golden-yellow; first seven antennal joints pale-yellow. Antennæ as in *ægrus*, but third and fourth funicle-joints very short, minute. Forewings long; narrow; hyaline; marginal cilia moderately long; discal cilia very fine and dense; submarginal vein attaining the costa about the middle of the wing; marginal vein short; stigmal vein rather long; postmarginal vein twice as long as the stigmal; venation indistinct. Length, 0.90 mm.

Described from two specimens caught while sweeping in jungle, May 15, 1913.

*Hab.*—North Queensland: Nelson, near Cairns (A. P. Dodd).

Type.—I. 1451, South Australian Museum. A female on a slide.

*TELENOMUS ORMENIS*, sp. nov.

♀. Like *odyssea*, but the funicle-joints are as wide as the pedicel, distinctly narrower in *odyssea*, the stigmal vein is much longer, and the discal ciliation is denser, in about thirty-six rows. Length, 0.90 mm.

Described from a single specimen caught while sweeping on edge of jungle, May 18, 1913.

*Hab.*—North Queensland: Kuranda, near Cairns (A. P. Dodd).

*Type.*—I. 1452, South Australian Museum. A female on a slide

*TELENOMUS ORODES*, sp. nov.

♀. Like *cegrus*, but all coxæ fuscous, apical half of antennal scape fuscous, wing venation distinct. Length, 0.75 mm.

Described from a single specimen caught with the preceding species.

*Hab.*—North Queensland: Kuranda, near Cairns.

*Type.*—I. 1453, South Australian Museum. A female on a slide

*TELENOMUS ORPHEUS*, sp. nov.

♀. Like *ormenis*, but the club of antennæ is wider, second joint the longest, third the longest in *ormenis*; forewings broader, discal ciliation sparser, indistinct, venation thicker, stigmal vein slightly curved caudad. Length, 1 mm.

Described from a single specimen caught while sweeping foliage of lantana, October 11, 1911.

*Hab.*—North Queensland: Mackay (A. A. Girault).

*Type.*—I. 1454, South Australian Museum. A female on a slide.



NOTES ON CRYPTORHYNCHIDES COLEOPTERA CURCULIONIDÆ IN THE SOUTH AUSTRALIAN MUSEUM,  
WITH DESCRIPTIONS OF NEW SPECIES.

By ARTHUR M. LEA, Museum Entomologist, Adelaide.

[Read September 11, 1913.]

The subfamily *Cryptorhynchides* contains a larger number of Australian weevils than any other. In the heavily-timbered parts of Australia, and especially in Queensland, they occur in amazing numbers; but as most of the species are strictly nocturnal in habits, are mostly of dingy colours, and frequently of small size, they are usually passed over by collectors, unless specially looked for.

Till recently there were but few species of the subfamily in the Museum, but that institution having acquired the major portion of the late Rev. T. Blackburn's collection, in which were many species of the subfamily, and having myself taken many species on a recent trip to Queensland, I have been enabled to describe many new genera and species of the subfamily. During the period when the descriptions were being drawn up some specimens from private collections were also examined, so that, although the types of all the new species remain in the Museum, many of the locality records are based on other than Museum specimens.

In addition to the species recorded or described here, there are many others in the collection, but as there was nothing fresh to add regarding these, either as to peculiarities of the specimens or as to fresh localities, it was not considered advisable to record them.

MELANTERIUS HYBRIDUS, n. sp.

♂. Reddish-castaneous, prothorax and under-surface frequently more or less infuscate. Rather densely clothed with scales varying from whitish to pale-ochreous; under-surface and legs with white scales.

*Eyes* separated almost the width of base of rostrum. Rostrum long and thin; with distinct punctures in feeble rows behind antennæ, smaller and more crowded in front of same. Scape thin, fully as long as funicle, inserted one-third from apex of rostrum; first joint of funicle as long as second and third combined. *Prothorax*: feebly transverse; with dense, partially-concealed punctures. *Elytra* oblong-cordate, base moderately trisinuate; with rows of rather large, partially-concealed punctures, in moderate striæ; interstices

mostly wider than punctures, the lateral ones, commencing with the fifth, more or less distinctly ridged along middle. Basal segment of *abdomen* with intercoxal process concave. *Femora* stout, strongly dentate. Length, 4.5 mm.

♀. Differs in the rostrum having smaller and sparser punctures, with antennæ inserted not quite so close to apex; intercoxal process of abdomen lightly convex; and four front tibiæ with spur commencing at summit of apical slope, instead of at apex itself (as in the male).

*Hab.*—South Australia: Quorn (Blackburn's collection); Port Lincoln (A. M. Lea). Type, I. 1355.

In appearance rather close to *Diethusa blackburni*, and the curious apex of the four front tibiæ of the female much the same, but the under-surface without the curious median line of clothing. Abraded specimens somewhat resemble similar ones of *M. floridus*, and the female tibiæ are much as figured for those of that species,<sup>(1)</sup> but that species has the third interstice carinated. In the present species the fifth is the first to be ridged along middle, and its ridge can only be traced where the surface has been abraded. Although the clothing is somewhat variegated, it is not distinctly spotted. The species might be referred with almost equal propriety to *Diethusa* or to *Melanterius*.

#### MELANTERIUS BICALCARATUS, n. sp.

♂. Dark reddish-brown, in places almost black; antennæ and tarsi paler. Rather sparsely clothed with small pale setæ; under-surface and legs with more numerous, stouter, and paler setæ.

*Eyes* widely separated. Rostrum long and thin, slightly dilated in front of antennæ; with clearly defined but not large punctures, becoming sublinear in arrangement behind antennæ, and not concealed at base. Scape thin, inserted one-third from apex of rostrum and the length of funicle; two basal joints of funicle subequal in length. *Prothorax* moderately transverse; punctures dense, moderately large, and clearly defined. *Elytra* oblong-cordate: with rows of rather large, oblong punctures, becoming small posteriorly; interstices wider than seriate punctures, the first three ridged posteriorly, but not on basal half, the others with the ridges gradually extended until they are almost continuous throughout, with fairly numerous punctures becoming seriate in arrangement on most of them. Basal segment of *abdomen* flattened in middle. *Femora* stout, moderately dentate; hind tibiæ widely notched near apex, the notch supplied with long setæ, four front ones bicalcarate at apex. Length, 6.6½ mm.

(1) Ann. & Mag. Nat. Hist., vol. xvi. (4 ser.), pl. i., fig. 19.

*Hab.*—South Australia: Oodnadatta (Blackburn's collection). Type, I. 1356.

The four front tibiae are bicalcarate at apex, the spurs are small and touch, but are quite distinct from some directions. Many other species appear at first to have two spurs, but the supposititious second one is usually a fascicle. Others also have the apex really bicalcarate, but the spurs, although not widely separated, are not touching, one marking the apex of the slight subapical sinus, and usually supporting a fascicle, and the other overhanging the apex.

Two specimens, apparently females of this species differ in having the eyes closer together (a most unusual feminine character), and the first joint of funicle distinctly longer than the second; hind tibiae not notched near apex, the four front ones each with a single spur, rostrum longer, thinner, more shining, with smaller and sparser punctures and antennae inserted almost in middle, and basal segment of abdomen distinctly convex.

*MELANTERIUS BISERIATUS*, n. sp.

Colour and clothing much as in preceding species.

*Eyes* widely separated. Rostrum long and thin; with distinct punctures about base, elsewhere sparse and minute. Scape thin, inserted about three-sevenths from apex of rostrum, somewhat shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* with punctures much as on preceding species. *Elytra* cordate, base not trisinate, sides rather lightly rounded, with rows of fairly large, sub-oblong punctures, becoming small posteriorly: interstices wide, each with two rows of distinct punctures, ridged along middle, but the ridges very feeble or absent at base. *Under-surface* with moderately dense punctures, but in a single row on parts of metasternal episterna; each of third and fourth abdominal segments with a single row across middle, basal segment rather strongly convex. *Femora* stout, moderately dentate. Length,  $4\frac{1}{2}$ – $4\frac{1}{4}$  mm.

*Hab.*—South Australia: Oodnadatta (Blackburn's collection). Type, I. 1357.

The sutural interstice is unusually wide, as nowhere is it narrower than the second, and posteriorly it is wider; it has a median ridge only on the posterior declivity, and even there it is irregular and ill-defined; its punctures are somewhat irregular, although subseriate in arrangement. On all the others the punctures are in two almost regular series. In my table would be associated with *interstitialis*, *incomptus*, and *tristis*, from all of which its larger size and very different elytral punctures will readily distinguish it. The (three) typical specimens are probably all females.

## MELANTERIUS CARDIOPTERUS, n. sp.

Dark-brown, almost black; rostrum, antennæ, and tarsi paler. Upper-surface with minute indistinct setæ, under-surface with sparse but more distinct ones, the legs moderately clothed.

*Eyes*, widely separated. Rostrum moderately long and lightly curved; with clearly-defined punctures, becoming rather coarse and linear in arrangement behind antennæ; with a distinct median carina. Scape rather thin, inserted two-fifths from apex of rostrum, and the length of funicle; first joint of funicle longer than second. *Prothorax* moderately transverse, with fairly large, clearly-defined punctures. *Elytra* cordate, shoulders and sides rather strongly rounded, with series of large punctures, becoming small posteriorly: interstices acutely ridged, except towards base, but the sutural one only on posterior declivity, the sutural one also with but one row of punctures; the others each with two feeble rows. Basal segment of *abdomen* flat in middle. *Femora* moderately stout, strongly dentate. Length, 3.3½ mm.

*Hub.*—South Australia: Tumby (Blackburn's collection). Type, I. 1358.

In general appearance close to *legitimus*, but femora without a granule in emargination, prothorax with larger punctures, and elytra with smaller and less clearly-defined ones in the striæ. In some respects it is close to *parvidens*, but that species has smaller femoral teeth, smaller punctures on metasternum and basal segment of abdomen, denser and smaller prothoracic punctures, and somewhat different elytra. The second and third interstices are carinated on the posterior half of the elytra, but the carina on each, instead of being in the middle, as in most species, is placed on the outer side; this is also the case with the carinæ of some of the other interstices but less conspicuously so; but several other species have the outer ones similarly carinated. *Compositus* has the second and third interstices similar, but the sutural punctures are smaller and sparser, and disappear before the middle, and the suture itself is carinated for a greater length; the punctures on the other interstices are much smaller and sparser, and the prothoracic ones are smaller.

A specimen from Sea Lake in Victoria (J. C. Goudie) probably belongs to this species, but differs in being larger and with the body parts quite black.

## MELANTERIUS BARIDIODES, n. sp.

Black, shining; antennæ and tarsi reddish. Upper-surface almost glabrous; under-surface and legs sparsely setose.

*Eyes* separated slightly less than width of base of rostrum. Rostrum long and thin; with not very dense punctures, but becoming linear in arrangement behind antennæ. Scape inserted slightly nearer apex than base of rostrum, much shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* with rather dense, and not very large, but clearly-defined punctures. *Elytra* subcordate, base lightly trisinate, sides gently rounded; with rows of not very large, and somewhat distant punctures, becoming smaller and closer together posteriorly; interstices almost flat on basal half, acutely ridged posteriorly, each with two rows of punctures. Basal segment of *abdomen* evenly convex. Four hind *femora* strongly and acutely dentate, the others edentate. Length,  $3\frac{1}{2}$  mm.

*Hab.*—North Queensland (Blackburn's collection); Cairns (E. Allen). Type, I. 1359.

At a glance appears to belong to the *Baridulæ*. In my table of the genus would be associated with *porosus*, but from that species, and from all others of genus, distinguished by the curious femoral dentition. The typical specimens are probably both females.

#### MELANTERIUS STENOCNEMIS, n. sp.

Black, elytra obscurely diluted with red, antennæ and tarsi red. Elytra with stout, sulphur-yellow setæ or scales condensed into distinct spots; under-surface and legs with rather sparse, whitish setæ.

*Eyes* close together. Rostrum moderately long and thin; punctures distinct, becoming larger towards base, but scarcely seriate in arrangement. Scape inserted about one-third from apex of rostrum, not much shorter than funicle: first joint of funicle slightly longer than second. *Prothorax* with dense, clearly-defined, and rather small punctures. *Elytra* cordate, sides rather strongly rounded; with rows of large punctures, interstices acutely ridged, the first only on posterior declivity, the others almost to base, each with a row of small punctures on each side of the ridge, but becoming feeble posteriorly. *Abdomen* with basal segment depressed in middle, with rather dense punctures; second with dense punctures but apical portion impunctate; third and fourth with minute punctures. *Femora* stout, strongly dentate, the four hind ones each with a granule in emargination; tibiæ thin, four front ones with hook cleft at apex, hind ones with hook dentate near base. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (F. P. Dodd). Type, I. 1360.

A very distinct species, allied to *aratus*, and with very similar abdomen, but somewhat larger, legs longer, elytral interstices more acutely carinated, and clothing of elytra in more numerous spots, etc. The teeth of the four hind femora are large and obliquely truncate at apex, on the others they are much smaller and acute.

MELANTERIUS NIVEODISPERSUS, n. sp.

Dark reddish-brown, in parts (especially the under-surface) almost black: antennæ reddish. Moderately densely clothed with light-brown or pale-ochreous scales, variegated with white.

*Head* with dense, partially-concealed punctures. Eyes rather large, separated less than width of rostrum at base. Rostrum rather long and thin, almost parallel-sided; with rather dense but not very large punctures, partially concealed only at base, and on sides near base; with a feeble median ridge. Scape inserted about two-fifths from apex of rostrum, shorter than funicle; first joint of funicle longer than second. *Prothorax* rather small and convex, sides strongly rounded, apex half the width of base: with dense, partially-concealed punctures. *Elytra* subcordate, much wider than prothorax, sides almost parallel to beyond the middle: with rows of large, partially-concealed punctures, alternate interstices conspicuously ridged along middle, from near base to near apex. Basal segment of *abdomen* convex in middle. *Femora* stout, moderately dentate: terminal hook of tibiæ small. Length, 5 mm.

*Hab.*—Western Australia: Cue (H. W. Brown). Type, I. 1541.

Allied to *floridus* and *costipennis*, but alternate interstices much more conspicuously elevated; and clothing, to the naked eye, more greyish. In outlines it is slightly closer to the former than to the latter. On the elytra the white scales are fairly numerous on the basal third and towards the apex, but on the rest of the upper-surface they are sparse and scattered singly. On the under-surface and legs they are mostly whitish, but on the sides of the former they are somewhat darker. The type is probably a female.

MELANTERIUS SOLITUS, Lea.

At the time of description of this species I had but a single specimen to examine. The species, however, is abundant on species of acacia in South Australia (Port Lincoln, Blanchetown, Moonta, Kangaroo Island).

Specimens in good condition have each elytral interstice marked by a distinct row of whitish setæ on each side, the rows quite evenly divided by the median ridges. On slight abrasion, however, the rows become indistinct. The scales in the prothoracic punctures do not rise to the general level.

The elytra are usually somewhat paler than the prothorax. The median carina of the prothorax is usually distinct, but more or less encroached upon by punctures. Of a pair taken *in cop*, the male has a distinct carina, but the female is without a trace of one. The difference, however, is not sexual, as it is absent from some males and present on some females.

The male has the metasternum and basal segment of abdomen widely and conjointly concave; in the female the metasternum is feebly depressed, but the basal segment of abdomen is convex. The female also has a somewhat longer and thinner rostrum than the male, and with smaller and sparser punctures. Her antennæ also are inserted less close to the apex. The size ranges from  $3\frac{1}{2}$ - $4\frac{3}{4}$  mm.

#### MELANTERIUS FLORIDUS, Pasc.

The curious spine or tooth on each of the four front tibiæ of this species, as figured by Pascoe, is sexually variable, being confined to the female. In the male each tibia is terminated by an apical tooth of smaller size and starting from the middle of the tibia, instead of from its upper apex.

#### MELANTERIUS SEMIPORCATUS, Er.

In my table of the species of *Melanterius* (Proc. Linn. Soc., N.S.W., 1899, p. 207) this species is placed with those having the femoral emargination normal. As a matter of fact, in the emargination (especially of the front pair) there is often a small supplementary tooth or granule, but (when present) it is always smaller than the similar one of *bidentatus* (a species which differs in many other respects, however). The large femoral teeth are usually more or less triangular, but on many specimens they are truncated (on the hind femora often conspicuously so).

#### MELANTERIUS COMPACTUS, Lea.

The types of this species have the elytra but little or not at all paler than the prothorax, but on a specimen from Port Esperance and two from Callington and Murray Bridge<sup>(2)</sup> the elytra are distinctly paler.

The sexes differ in the four front tibiæ as do the sexes of *floridus*, except that in the females the apical spurs diverge at a greater angle.

(2) Now first recorded from South Australia.

## MELANTERIUS TRISTIS, Lea.

Two specimens from Hergott Springs certainly appear to belong to but one species, but in my table of the genus the female would be placed with *compactus* and *castaneus*, as its second and third elytral interstices are not triangularly raised posteriorly; while the male would be placed with *tristis*. The species is much narrower than *compactus* or *castaneus*, and possibly is not *tristis*, as the elytral punctures are sparser and smaller, and the interstices are less conspicuously or not at all carinated. It seems best at present, however, to regard the specimens as aberrant ones of *tristis*.

## MELANTERIUS APICALIS, Lea.

A male from Cairns differs from the type in having the spur at the apex of each of the middle tibiæ notched, so that from some directions it appears as two short spurs: the spurs on the hind tibiæ are also feebly notched, but on the front pair they are simple.

## DIETHUSA SUTURALIS, n. sp.

♂. Reddish-castaneous: head, prothorax, and elytra sometimes infuscate. Moderately clothed with reddish or ochreous scales, more or less feebly variegated; under-surface mostly with whitish scales, but with a line of whitish setæ.

*Rostrum* rather long, thin, and almost parallel-sided: behind antennæ with punctures in lines, and leaving a feeble median carina. *Scape* thin, about the length of funicle, inserted one-third from apex of rostrum: first joint of funicle slightly longer than second and third combined. *Prothorax* lightly transverse; with dense punctures. *Elytra* subcordate, base moderately trisinuate; with large, partially-concealed punctures; interstices wide, the first acutely carinated throughout, third and fifth moderately ridged on posterior half, the lateral ones almost throughout. *Metasternum* and basal segment of *abdomen* with a sulcus commencing almost at base of former, and continued almost to apex of latter, and containing the line of setæ; apical segment with a shallow impression. *Femora* stout, strongly dentate. Length, 4-4½ mm.

*Hab.*—South Australia (Blackburn's collection). Type, I. 1330.

Structurally very close to *blackburni*, but with clothing of upper-surface very different. On the lower-surface the peculiar median clothing also extends to a greater length. In this respect, and also in its acutely bicarinated suture, it agrees with *metasternalis*, but that species is of more compact form, and with prettily-variegated clothing, its second abdominal



segment is somewhat larger, and its metasternal fovea considerably larger.

DIETHUSA FUNEREA, n. sp.

Almost black; antennæ, tarsi, and tip of rostrum reddish. Densely clothed with sooty scales: most of under-surface and legs with white or whitish scales.

*Rostrum* moderately long, thin, and parallel-sided; basal half with coarse, but more or less concealed punctures; apical half with smaller, but clearly-defined ones. Scape not very thin, inserted almost in middle of rostrum, much shorter than funicle; basal joint of funicle slightly longer than second. *Prothorax* lightly transverse, with dense punctures. *Elytra* subcordate, base rather strongly trisinuate, with rows of rather small punctures, in narrow striæ, the striæ distinct, but the punctures almost concealed: interstices wide, with dense concealed punctures, nowhere ridged. Basal segment of *abdomen* rather strongly convex, apical with a feeble impression. *Femora* stout, hind pair strongly, middle ones moderately, front ones lightly dentate; four front tibiæ each with apical hook small. Length, 4 mm.

*Hab.* — South Australia: Poonindie (Blackburn's collection). Type, I. 1331.

In the rostrum, whose apex when at rest is received into a slightly concave mesosternal receptacle, instead of passing beyond same, this species agrees with *Psydestis* and *Melanteriosoma*, but the second abdominal segment, although much shorter than the first, is not unusually short, and the eyes are moderately faceted. Too many genera have already been proposed at the expense of *Melanterius*, so it seems better to treat the present species as an aberrant member of *Diethusa* rather than to propose a new genus for its reception. A second specimen differs from the type in having the elytra (although their clothing is still sooty) and legs reddish. The two evidently belong to but one sex, but I am doubtful as to what that sex is.

DIETHUSA SILACEA, n. sp.

♂. Reddish-castaneous. Densely clothed with ochreous scales variegated with golden; becoming whitish on under-surface and legs.

*Rostrum* rather long and thin, very feebly diminishing in width from base to apex; with dense punctures, becoming coarser and linear in arrangement behind antennæ, and with a feeble median carina. Scape inserted very slightly nearer apex than base of rostrum, shorter than funicle; first joint of funicle as long as second and third combined; club rather

large. *Prothorax* moderately transverse, with dense punctures. *Elytra* subcordate, subhumeral incurvature rather slight; with rows of rather large but partially-concealed punctures, in rather narrow striæ; interstices wide, nowhere ridged. Basal segment of *abdomen* obliquely flattened in middle, apical with a wide shallow depression. *Femora* stout, strongly dentate. Length, 5 mm.

*Hab.*—Western Australia (Blackburn's collection). Type, I. 1332.

The largest of the genus as yet described. It seems probable that I previously confused females of this species with a male of *porphyrea*.<sup>(3)</sup> The three specimens now before me, that I described as such, have the third, fifth, and seventh interstices of elytra not conspicuously ridged, as in the male of that species, but scarcely different to the others, so that it is only on looking at them from in front that they can be noticed to be at all elevated above the others, and they are certainly not ridged. These females differ from the type of the present species in having the rostrum longer, and decidedly thinner and narrowed from insertion of antennæ (these distinctly nearer base than apex), with smaller and sparser punctures, and abdomen with basal segment evenly convex. Their golden (on one specimen golden-red) scales form spots amongst the ochreous ones. The type is certainly not *porphyrea*, however, as it is a male (the rostrum and abdomen are conclusive of this), and it has the elytral interstices very different to those of that species. Its claws are also unusually small and close together, so that, from most directions, each tarsus appears to be terminated by a single claw.

#### DIETHUSA INERMIS, n. sp.

♂. Black, antennæ, legs, and tip of rostrum reddish. Densely clothed with more or less ochreous scales, varied with spots of stramineous; under-surface and legs mostly with whitish scales.

*Rostrum* moderately long, almost parallel-sided to insertion of antennæ, thence somewhat narrowed to apex; basal half with coarse, partially-concealed punctures, and a narrow median carina; apical half with dense, clearly-defined punctures. Scape inserted about two-fifths from apex of rostrum, somewhat shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* moderately transverse; with dense punctures. *Elytra* subcordate, base strongly trisinate, basal half parallel-sided; with rows of oblong

<sup>(3)</sup>Proc. Linn. Soc., N.S.W., 1899, p. 252.

punctures, in narrow, deep striæ, the striæ distinct, but punctures almost concealed; interstices wide, nowhere ridged, with dense and rather coarse but normally quite concealed punctures. Basal segment of *abdomen* obliquely flattened in middle; apical with a wide impression. *Femora* stout, edentate. Length,  $2\frac{1}{2}$ -3 mm.

♀. Differs in having the rostrum longer, more decidedly narrowed in front of antennæ (these inserted not so close to apex) with less clothing, smaller and sparser punctures, and about half of it red; basal segment of abdomen evenly convex, and apical not impressed.

*Hab.*—South Australia (Blackburn's collection and Macleay Museum); Murray Bridge (A. M. Lea). Tyne, I. 1333.

This species and *tenuirostris* and *sulfurea* are without femoral teeth, and on that account should perhaps be referred to a new genus, but the dentition certainly varies in *Diethusa* from feeble to strong, and some have the front femora edentate. Moreover, this species in general appearance is extremely close to some of *Diethusa*, and three specimens of it were previously referred to by me as belonging to *concinna*, and they certainly look as if they belonged to that species, but the entire absence of femoral dentition is distinctive. On some specimens the majority of the scales are almost brick-red in colour, with the pale spots strongly contrasted; on others most of the scales are of a dingy-ochreous, with the spots but feebly contrasted. On the prothorax there are no distinct spots, although the clothing in places varies somewhat in colour.

#### DIETHUSA PALLIDICOLLIS, n. sp.

Reddish-castaneous. Densely clothed with white or whitish scales, but on most of elytra more or less ochreous or golden.

*Head* with dense, concealed punctures. Rostrum rather long, moderately wide from base to antennæ (which are inserted at basal two-fifths), but then narrow and thin to apex; towards base with partially-concealed punctures, separated by narrow ridges, elsewhere with minute punctures. Scape about half the length of funicle and club combined. *Prothorax* strongly transverse, evenly convex; with dense punctures. *Elytra* briefly cordate, distinctly wider than prothorax; with rows of fairly large more or less concealed punctures in distinct striæ: interstices wide, with dense concealed punctures. *Under-surface* with dense concealed punctures. Basal segment of abdomen convex, as long as three following combined, fifth shallowly impressed at apex. *Femora* stout, strongly dentate. Length,  $3\frac{3}{4}$ -4 mm.

*Hab.*—Western Australia: Cue (H. W. Brown). Type, I. 1544.

In some respects, notably of the rostrum, close to *silacea* and *inequalis*, but clothing of prothorax conspicuously different to that on most of the elytra. On the prothorax, under-surface, and legs the scales are mostly white, but in places they are more or less feebly stained with ochreous. On the apical half of elytra the scales are more or less pale-ochreous, becoming paler at the tip, but on the basal half they are but little different in colour to the derm on which they rest; the shades of colour, however, gradually run into one another. On the scutellum they are of a snowy-whiteness. The (four) typical specimens are apparently all females.

DIETHUSA NODIPENNIS, n. sp.

Reddish-castaneous; in parts stained with black. Densely clothed with stramineous, or light-ochreous, scales, in places somewhat darker.

*Head* with concealed punctures. Rostrum moderately long, parallel-sided between base and antennæ (which are inserted in almost exact middle), and then strongly narrowed to apex; basal half with partially-concealed punctures and a median carina, elsewhere with small punctures. Scape slightly more than half the length of funicle and club combined. *Prothorax* small, moderately transverse, rather strongly and somewhat unevenly convex; punctures concealed. *Elytra* briefly subcordate, much wider than prothorax; with rows of almost concealed punctures, in distinct striæ, the latter often deflected by tubercles; interstices with numerous tubercles of various sizes. *Under-surface* with dense, concealed punctures. Basal segment of *abdomen* convex, as long as three following combined. *Femora* stout, edentate. Length,  $3\frac{2}{3}$  mm.

*Hab.*—Western Australia: Beverley (F. H. du Boulay). Type, I. 1545.

The multituberculate elytra and edentate femora render this one of the most distinct species of the allied genera. Its nearest ally is probably the Queensland *sulfurea*. In size, and to a certain extent in clothing, it resembles *Neolybæba remota*, but the rostrum, elytra, femora, etc., are very different; the tip of the rostrum and most of the sternal sutures are black. The tubercles are nearly all on the odd interstices, including the sutural one; the largest are on the third and fifth; on the basal half there are but few, but those of rather large size, but on the apical half they are numerous. The striæ, especially the second to fifth, are frequently deflected

by them. The larger ones are usually crowned with scales that are darker than the surrounding ones. The type is probably a female.

#### DIETHUSA ACUTICOSTA, Lea.

The female of this species has the four front tibiae as in the female of *blackburni*. A specimen from Port Lincoln exhibits the curious apical dentition quite conspicuously. On the type female the tibiae were clogged with gum, and so the dentition was overlooked.

#### DIETHUSA BLACKBURNI, Lea.

The type of this species is clothed with almost uniformly white scales, the feebly-spotted appearance of the elytra being due to somewhat irregular disposition of the scales rather than to shades of colour. It is a female; the male differs in having each of the four front tibiae with the apical tooth in the normal position. The rostrum is shorter, with larger and denser punctures, condensed into strong but partially-concealed rows behind antennae, and the antennae are inserted somewhat nearer its apex. The basal segment of its abdomen is slightly concave (instead of distinctly convex) and has a curious line of stramineous clothing along its middle and continued on to metasternum.

#### DIETHUSA FAMELICA, Lea.

The types of this species were described as having the abdomen with "the three median segments so depressed that their lengths can only be seen from the sides"; this, however, was due to the apex of the abdomen, in each, being somewhat protruded. On specimens with the abdomen in its normal position the length of the second segment is easily seen, but the third and fourth are depressed below its level and the level of the fifth; and as they are extremely short if the tip of the abdomen is at all free from the elytra (as it frequently is) they are almost concealed.

The clothing is dense and variable. A specimen from Blackburn's collection has the scales on the upper-surface dark-brown, but with an appearance as of numerous short whitish stripes (along the striae) on the elytra, and the prothorax with a median line and white patches on the sides. Other specimens (from Murray Bridge) have most of the scales pale, but with numerous sooty or dark-brown spots (not symmetrically disposed) on the prothorax and elytra. No two, of the fourteen specimens (including one from Birchip in Victoria) before me, agree in their markings.

## NEOMELANTERIUS INTERRUPTUS, n. sp.

Black, antennæ and tarsi red. Clothed with rather long straggling white setæ, denser on metasternum, basal segment of abdomen, and legs than elsewhere.

*Head* with dense round punctures. Eyes close together, a narrow impression behind each. Rostrum the length of prothorax, almost straight: basal fourth with three strong carinæ, separating strong rows of punctures, elsewhere with small punctures. Scape thin, inserted one-third from apex of rostrum, the length of funicle: first joint of funicle stouter than second, but scarcely longer. *Prothorax* almost as long as wide: with dense and rather large, more or less confluent punctures: with a narrow and continuous median carina. *Elytra* cordate, sides rather strongly rounded, with rows of rather large, somewhat distant punctures, becoming small posteriorly: interstices more or less acutely carinated. *Abdomen* with dense and rather coarse punctures on the apical, and the two basal segments; first short and strongly convex, apical with subreniform impression. *Femora* moderately stout and rather strongly dentate. Length, 5 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1361.

The elytral sculpture is practically identical with that of *carinicollis*, but that of the prothorax is very different. The prothoracic punctures are readily seen, but here and there two or three are more or less confluent, in consequence of which there appears to be a few short irregular carinæ, but these are very different to the long carinæ of *carinicollis*, conspicuous from base to apex, and with the punctures (except at the sides) not in evidence. It also differs from that species in being narrower, deep-black, and with somewhat different clothing. The second, fourth, sixth, and eighth interstices are each distinctly carinated near the base, but the carina is then interrupted for a short distance, so that large punctures appear to be in double rows there.

NEOLYBÆBA, Blackb.<sup>(4)</sup>

This genus is extremely close to *Diethusa*, and probably should be merged in it. It is known only from a single (and probably a female) specimen, now in the South Australian Museum. Its eyes are unusually coarsely faceted, more so than in any species of *Diethusa* known to me, and the second abdominal segment is also larger than in most species of that genus. Its four front tibiæ are bicalcarate at apex (a variable feature in both *Diethusa* and *Melanterius*), the smaller spur being partially concealed by clothing.

(4) Trans. Roy. Soc., S. Aust., 1892, p. 193.

## NEOLYBEBE REMOTA, Blackb.

Among the allies of *Melanterus* this species is readily identifiable by the fifth interstice on each elytron being supplied with a distinct preapical callus. Many of the scales on the upper-surface have, in some lights, a beautiful golden lustre, a fact not mentioned in the original description, but of extremely rare occurrence in the *Cryptorhynchides*.

## AONYCHUS STRIATUS, Lea, var.

Two specimens from the Northern Territory evidently represent a variety of this species. They differ from the types in having the darker scales absent from the prothorax, except for a feeble spot on each side of the base; on the elytra also they occupy considerably less space than the whitish ones, and form somewhat angular markings about the suture and sides.

## MECHISTOCERUS MARMOREUS, n. sp.

♂. Black, antennæ and tarsi red. Densely clothed with scales closely applied to derm: and with stouter suberect ones.

*Head* with dense and rather coarse punctures. Ocular fovea elongate, rather suddenly enlarged in front. Rostrum long and thin; basal third with coarse partially-concealed punctures, leaving three feeble ridges, elsewhere shining, and with small, clearly-defined punctures. Antennæ thin; scape inserted one-third from apex of rostrum, first joint of funicle stouter, but no longer than second. *Prothorax* lightly transverse, sides strongly rounded; with a feeble median carina: with large and usually distinct punctures. *Elytra* elongate-subcordate, about one-third wider than prothorax; with rows of large, but more or less concealed punctures. *Metasternum* distinctly shorter than the following segment: with fairly numerous punctures, including a distinct row on each episternum: narrowly impressed along middle, but the impression deep and dilated at both ends. *Abdomen* with sparse punctures, some as large as on metasternum, but most of them smaller: basal segment feebly depressed in middle. *Femora* lightly dentate, the hind ones just passing apex of elytra. Length,  $5\frac{1}{2}$ - $7\frac{1}{2}$  mm.

♀. Differs in having the rostrum thinner in front of antennæ, much less of the base with coarse punctures, and without median ridges: antennæ inserted not so close to apex of rostrum; and basal segment of abdomen gently convex.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1459.

In my table of the genus would be associated with *mastersi* and *dispar*; from the former it differs in being considerably

smaller and narrower, legs shorter, and clothing somewhat different. Its abdominal clothing is very different to that of *dispar*, and there are many other differences. In its comparatively short metasternum it agrees with *compositus*, but the shoulders are wider, abdominal clothing much sparser, punctures different, etc. On the elytra the scales are mostly fawn-coloured or of a dingy-brown, largely mottled with irregular sooty patches, and with sparser, pale, irregular spots. Each interstice has a feeble row of stout suberect scales (usually arising from a feeble granule), and each seriate puncture has a similar scale. On the prothorax the scales are nearly all moderately long, mostly sooty, but with fawn-coloured ones scattered about, and forming three feeble lines. On the under-surface the clothing is pale and sparser and thinner than elsewhere. On the legs the clothing is of a somewhat brick-red colour and very dense.

Five specimens from New South Wales (Dorrigo, Illawarra, and Otford) are extremely close in general appearance, but differ in having the prothorax more densely clothed, and with less evident punctures: the under-surface with stouter scales, frequently sooty, and the rostrum long and thinner, with the scape inserted not quite so close to apex. They appear to be all females, and probably represent a new species, but I am averse to naming them without knowing the male

#### MECHISTOCERUS CYLINDRICUS, n. sp.

Red. Densely clothed.

*Head* with coarse concealed punctures. *Rostrum* (for the genus) rather short; basal third with coarse concealed punctures and three feeble ridges, elsewhere shining and with small, clearly-defined punctures. *Scape* inserted two-fifths from apex to rostrum; second joint of funicle longer and thinner than first. *Prothorax* rather strongly transverse, sides strongly rounded, apex about two-thirds the width of base; median carina feeble; with crowded, partially-concealed punctures. *Elytra* narrow and cylindrical, not much wider than widest part of prothorax; with rows of large, almost concealed punctures. *Under-surface* with dense more or less concealed punctures, including on the metasternal episterna. *Metasternum* as long as the following segment, rather lightly impressed along middle. *Abdomen* with first segment somewhat flattened in middle, not much longer than second, second slightly longer than third and fourth combined, each of these almost as long as fifth. *Legs* comparatively short; femora rather strongly dentate, hind ones just extending to apical segment. Length, 6 mm.



*Hab.*—Queensland. Cairns district (A. M. Lea). Type, I. 1460.

A small, cylindrical species, allied to *vulneratus*, but smaller and with very different clothing. On the elytra, under-surface, and legs the scales are dense, moderately stout, and almost uniformly pale-stramineous. On the elytra each seriate puncture contains a scale, but it is traceable with difficulty, and the interstices are entirely without larger scales amongst the others. On the prothorax the scales are stouter, longer, not quite so dense, and feebly variegated. On the head and base of rostrum they are much as on the elytra, except that they are a trifle darker. The rostrum is no longer than the prothorax. The type is probably a male.

MECHISTOCERUS METASTERNALIS, n. sp.

Black, antennæ and tarsi red. Densely clothed with brick-red scales, in places variegated with sooty-red ones.

*Head* with coarse more or less concealed punctures. Ocular fovea deep and narrow, but dilated in front. Rostrum long and thin, basal fourth with concealed punctures and three ridges, sides to antennæ with rather small clearly-defined punctures, elsewhere with minute ones. Scape inserted two-fifths from apex or rostrum; first joint of funicle slightly longer than second. *Prothorax* moderately transverse, sides rather lightly rounded; with a rather feeble median carina; with crowded partially-concealed punctures. *Elytra* subcordate, base trisinate and about one-third wider than prothorax, basal half parallel-sided; with rows of very large, deep punctures, becoming smaller posteriorly. *Metasternum* short; with a wide, deep, and irregular median excavation, each side of which is bounded posteriorly by a raised, shining, densely punctate space; elsewhere with large or very large punctures. *Abdomen* with basal segment flat in middle, with some moderately large punctures, and some very large ones on each side near coxæ; second segment sloping downwards to apex, with two or three irregular rows of fairly large punctures. *Legs* rather long; hind femora strongly, the others moderately, dentate; hind ones passing elytra for a short distance. Length,  $5\frac{1}{2}$ – $7\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea); Kuranda (G. E. Bryant). Type, I 1461.

Readily distinguished from all previously described species by the metasternum. In build the species resembles *duplicatus*, *cancellatus*, and *punctiventris*. The brick-red scales clothe most of the upper-surface. On the elytra they appear to be feebly fasciate in arrangement, partly owing to the large punctures, and partly to small patches of sooty

scales; on each interstice there is a row of stouter scales. On the prothorax the scales are suberect, and but few of them are sooty. On the under-surface the scales are sparse and confined to the punctures. The legs are densely clothed. The very large elytral punctures are open behind but somewhat cavernous in front; they vary from almost quadrate to twice as long as wide. The four typical specimens are probably all males.

MECHISTOCERUS BASALIS, n. sp.

♂. Of a sooty-black, antennæ and tarsi red. Rather sparsely clothed, but with a conspicuous short line of pale scales on each side of scutellum.

*Head* with rather coarse, crowded punctures. Ocular fovea long, narrow, and deep. Rostrum long and thin; basal third with rows of large punctures, leaving three median ridges, elsewhere shining and with minute punctures. Scape inserted one-third from apex to rostrum; two basal joints of funicle subequal in length, but the first stouter than the second. *Prothorax* feebly transverse, basal two-thirds almost parallel-sided, median carina short and feeble; with moderately large but not crowded punctures. *Elytra* with base trisinate and about one-third wider than prothorax; with rows of large, deep punctures, rapidly becoming smaller posteriorly. *Metasternum* rather short, with a deep and rather wide median impression dilated posteriorly; with very large punctures or foveæ; episterna narrowly impressed throughout. *Abdomen* with basal segment rather flat in middle; with a few large punctures, and with a row of very large subconnected ones on each side near coxæ; second segment with a few fairly large punctures at base and across middle. *Legs* long; hind femora strongly, middle moderately, front feebly dentate, hind ones distinctly passing apex of elytra. Length, 6 mm.

♀. Differs in being larger ( $7\frac{1}{2}$  mm.), rostrum longer and thinner, basal punctures and ridges less pronounced, antennæ inserted not quite so close to apex of rostrum, basal segment of abdomen more convex and legs somewhat shorter.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1462.

The elytral punctures and clothing render this species very distinct. The conspicuous lines of scales are on the third interstice, and about half the length of the prothorax; on the rest of the elytra the clothing is very sparse, and consists of minute sooty scales and some long sooty ones, with a few pale scales congested in places. On the prothorax the scales are stramineous and sooty, and set in punctures. On the under-surface the scales are sparse and thin. The legs are

moderately densely clothed, mostly with sooty-brown scales. The very large elytral punctures are often subconical in shape, each narrowed to and open at apex, and cavernous at base, about the base many of them are twice as large as the scutellum. The interstices, except on the sides, are not separately convex. On the side-pieces of the mesosternum the punctures are large and distinct, but on the side-pieces of the metasternum they are not traceable, being replaced by the narrow and continuous impression.

#### MICROBEROSIRIS.

This genus was founded upon a single specimen with remarkable characters, but the type was somewhat damaged, and, owing to its minute size, it was difficult to manipulate it to see all parts clearly. Its femora, described as without grooves, are really grooved, although these are indistinct from some directions; the funicle is longer than the scape, and its basal joint is as long as the four following ones combined. The rostrum is thin, moderately long in the male, and decidedly long in the female.

#### MICROBEROSIRIS EXILIS, Lea.

The type of this species was described as having dense and uniform white scales, but it really has vague remnants of darker markings on the suture, and an angular spot on each elytron about the summit of the posterior declivity.

Recently numerous specimens, evidently belonging to the species, were beaten from foliage at Murray Bridge, and these indicate that the species is a variable one, ranging from a form, whose clothing is as on the type, to others with much darker and more extended markings; on many specimens there are two spots on each elytron, and the sutural marking is angularly dilated near the apex; on one specimen the outer spots are irregularly joined together, so that the elytra appear to be irregularly trivirgate. Many of the specimens have two irregular prothoracic stripes, usually interrupted so as to appear like four angular spots. On the prothorax also some darker scales are scattered singly, giving the surface a speckled appearance. The size ranges from  $1\frac{1}{3}$  to  $1\frac{2}{3}$  mm.

#### MICROBEROSIRIS ALBUS, n. sp.

♂. Black, in places obscurely diluted with red. Densely clothed with white scales, except on greater portion of rostrum.

*Rostrum* long, thin, and moderately curved; with minute punctures. *Prothorax* almost as long as wide, sides lightly rounded, base bisinuate: with dense, concealed punctures.

*Elytra* elliptic-cordate, not much but distinctly wider than prothorax, each separately rounded at base; with rows of rather large partially-concealed punctures in light striae. *Pectoral canal* terminated at abdomen. *Legs* rather short: hind femora not extending to apical segment. Length.  $1\frac{1}{4}$ - $1\frac{1}{2}$  mm.

♀. Differs in having the rostrum slightly longer and thinner and with only the extreme base clothed.

*Hab.*—South Australia (Macleay Museum); Adelaide (H. H. Griffith); Gawler, beaten from foliage (A. M. Lea). Type, I. 1781.

A narrow, minute, elliptic species. The clothing is of an almost snowy whiteness, but sometimes with a faint-bluish tinge, and there are no traces of darker markings on any of the twenty-six specimens before me. Parts of the antennæ are quite black, and no part is of a distinct red; the apical fourth, or half, of the rostrum is usually of a more or less distinct red. Its tip, when at rest in the canal, appears almost to touch the abdomen, and the tip of the canal does extend to it.

*AXIONICUS INSIGNIS*, Pasc., var. *INTERIORIS*, n. var.

There are six specimens, three of each sex, in the Museum collection that were taken in the Victoria Desert by Mr. Helms during the Elder Expedition, marked as having been obtained under bark of Kurrajong, and identified, without comment, by the late Rev. T. Blackburn, as *Axionicus insignis*.

They differ, however, from normal specimens of that species in being decidedly narrower, with somewhat longer legs and with the conspicuous white markings of the normal form either entirely absent, or replaced by stramineous scales and somewhat differently disposed. Thus on all of them the prothorax is without the conspicuous apical patch of the normal form, the postmedian fascia of the elytra is less sharply defined and, although traceable, its presence appears to be marked by sparsity of scales before and after it, rather than to any special character of the scales themselves, as the snowy whiteness of the scales composing the fascia of the normal form. The size varies from 14 to 21 mm.

*PERISSOPS OCHREONOTATUS*, n. sp.

♂. Black, in places sometimes obscurely diluted with red, antennæ (club excepted) and tarsi red. With numerous spots of ochreous scales; with minute green scales scattered about. Under-surface and legs with whitish and ochreous scales.

*Head* with small punctures; with a feeble medio-basal line; with a deep fovea extending from eye to eye. *Eyes* large, facets moderately large. *Rostrum* rather wide; with an impunctate line along middle, elsewhere with numerous but rather small punctures, concealed on sides of basal half. *Scape* inserted two-fifths from apex to rostrum, somewhat shorter than funicle. *Prothorax* moderately transverse; with small punctures, but with some large ones at the sides in front; basal half (or two-thirds) with small granules, usually depressed and transverse. *Elytra* with outlines almost continuous with those of prothorax, strongly convex; with rows of small punctures, becoming large on sides; with transverse granules or narrow short ridges on three first interstices, and at bases of some of the others. *Femora* stout, each with a ridge terminating in a distinct tooth; tibiae compressed, lightly curved. Length, 6-8½ mm.

♀. Differs in being less convex, rostrum longer, thinner, with smaller and sparser punctures, and without a smooth median line; scape inserted not quite so close to apex of rostrum, and basal segment of abdomen evenly convex instead of with the intercoxal process shallowly depressed.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1457.

A strongly convex, narrowly elliptic species. The rather coarsely faceted eyes, large ocular fovea, and peculiar cephalic clothing are as in *semicalvus*, with which it would be associated in my table, but the two species are otherwise very different. The head is bald except for three ochreous spots: one behind each eye and one in middle. On the prothorax there is a stripe (sometimes broken up) on each side, several spots on the flanks, an elongate spot in middle of apex and one on each side of middle. On the elytra the spots are numerous but of irregular size and irregularly distributed. On the under-surface there are fairly numerous spots, including three on the second abdominal segment. The minute green scales cause the upper-surface to appear opalescent in certain lights. There are some dingy-brown or sooty scales scattered about, but they are very indistinct. On the hind parts of the elytra there are usually feeble rows of whitish scales, but these appear to be very easily abraded, as they are frequently absent, or greatly reduced in numbers. The third interstice at the base is distinctly raised, somewhat curved, and with numerous short transverse ridges. Numerous specimens were obtained at Malanda by beating branches of newly-felled trees. A specimen from Comboyne (New South Wales) appears to belong to the species, but is too much abraded for certainty.

## PERISSOPS PARVUS, n. sp.

Of a dingy-red, antennæ almost flavous. Densely clothed with soft ochreous or muddy-brown scales, somewhat variegated on upper-surface; under-surface and legs with mostly whitish scales.

*Head* wide; punctures and ocular fovea concealed. Eyes rather small, distant, and coarsely faceted. Rostrum short, wide, and feebly curved; with coarse punctures behind antennæ, smooth and almost impunctate in front of same. Scape inserted in middle of rostrum, distinctly shorter than funicle. *Prothorax* moderately transverse, sides rather strongly rounded, apex more than half the width of base, punctures more or less concealed. *Elytra* elongate-subcordate, sides very feebly rounded, and at base but little wider than prothorax; with rows of rather large, but more or less concealed, punctures. *Mesosternal receptacle* moderately wide, with rather thin lightly-elevated walls, not much stouter at base than elsewhere. *Abdomen* with basal segment rather strongly convex, its apex very feebly incurved to middle. *Femora* stout, moderately dentate, tibiæ somewhat compressed. Length,  $3\frac{3}{4}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1458.

The coarsely faceted and widely separated eyes are at variance with most species of the genus, and the suture between the two basal segments of abdomen is almost straight. But it appears better to refer the species to *Perissops* rather than to a new genus. It is the smallest species as yet referred to it. On the prothorax there are some sooty scales scattered about, and compacted into two feeble median spots, and two still more feeble apical ones. On the elytra there are a few sooty scales scattered about, and each interstice usually has a row of semi-erect whitish scales. The head is densely clothed.

## TYRTÆOSUS FLAVONOTATUS, n. sp.

♂. Black, elytra, and rostrum sometimes diluted with red, antennæ and tarsi more or less reddish. Rather sparsely (denser and paler on legs than elsewhere) clothed with pale setæ or elongate scales, but elytra with numerous small spots of small, wide, flavous scales; a very conspicuous spot on each side of prothorax in front.

*Head* with dense punctures; with a rather feeble median carina, distinctly impressed behind each eye. Eyes rather close together. Rostrum with dense and rather coarse punctures behind antennæ, in front of same with smaller and sparser, but more clearly defined, ones. *Prothorax* with

strongly rounded sides; with dense round punctures, larger on sides and smaller about apex than elsewhere, nowhere confluent; median carina strong. *Elytra* cordate; with rows of large punctures in wide striæ, becoming smaller posteriorly, interstices much narrower than striæ, each with an irregular row of small punctures. *Metusternum* with a conspicuous oblique ridge on each side between coxæ; punctures of episterna rather strong but not continuous. *Abdomen* with a single row of punctures across middle of each of the third and fourth segments, basal segment feebly depressed in middle. *Legs* stout; femora strongly dentate; hind tibiæ strongly dilated to apex. Length, 6-7½ mm.

♀. Differs in being stouter, rostrum somewhat longer and thinner, with smaller punctures, less numerous towards base, antennæ inserted not quite so close to apex of rostrum, legs slightly shorter and basal segment of abdomen gently convex.

*Hab.*—Queensland. Cairns district (E. Allen, F. P. Dodd, H. Hacker, A. M. Lea). Type, I. 1301.

An abundant species, close to *microthorax*, but elytra more sparsely clothed and cephalic carina more feeble. On *microthorax* the scales are so dense that the interspaces between the elytral costæ are almost entirely covered, and on each elytron there is a conspicuous oblique stripe of pale scales, of which there is no indication whatever on the present species. On that species also the spot on each side of the prothorax is very faintly indicated, and would probably not be noticed unless specially looked for; on the present species, even with badly abraded specimens, the spots are usually very distinct.

#### TYRTÆOSUS MAJORINUS, n. sp.

♂. Jet-black, antennæ and tarsi reddish. Prothorax with long stramineous setæ, nearly all directed towards median carina, each side in front with a conspicuous spot of pale scales. Elytra with sparse, fawn-coloured scales scattered about, but with a spot of similar scales behind almost every large puncture, with somewhat larger spots of whitish scales irregularly scattered. Clothing of under-surface varying from white to black.

*Head* with rather dense punctures; with a short distinct medio-frontal carina; with a wide depression behind each eye; these closer together than is usual. Rostrum moderately long; basal half with dense and coarse punctures, somewhat linear in arrangement, apical half with much smaller, but clearly-defined, ones. *Prothorax* with strongly rounded sides; with large punctures, having a tendency to become

longitudinally confluent: median carina strong. *Elytra* slightly wider than in the preceding species, the punctures more distant and shallower, and the striae wider and shallower. *Metasternum* with a strong oblique ridge on each side between coxae, and a distinct subconical tubercle between each ridge and medio-basal impression; punctures of episterna strong but not continuous. *Abdomen* with a distinct row of punctures across each of the third and fourth segments; first gently concave in middle, second suddenly but not strongly depressed below level of first. *Legs* stout, femora strongly dentate; hind tibiae rather strongly dilated to apex. Length,  $8\frac{1}{4}$ - $9\frac{1}{2}$  mm.

♀. Differs from the male, as does the female of the preceding species.

*Hab.*—Queensland: Cairns district (E. Allen, F. P. Dodd, A. M. Lea). Type, I. 1302.

The outer walls of the punctures, along the median half of the prothorax, are more or less tilted, so that, from certain directions, the derm there appears to be covered with numerous slightly-waved carinae. At a glance specimens of this species appear to be simply large ones of the preceding species, but there are seventeen of it before me and forty-eight of the former, and the differences noted are constant.

#### TYRTÆOSUS NIGROMACULATUS, n. sp.

♂. Reddish-castaneous, in places more or less deeply stained or spotted with black. Clothed with stramineous scales, some on the prothorax and under-surface almost setose in character, but mostly fairly stout; elytra with wide, depressed scales, more or less congested into feeble spots in the striae. Legs with numerous thin whitish setae.

*Head* with rather dense punctures, becoming coarser in front; a distinct impression behind each eye; these fairly close together in front. Rostrum moderately long, basal half with coarse dense punctures, becoming smaller and more sharply defined in front. *Prothorax* with strongly rounded sides; with large round punctures, nowhere confluent; median carina very feeble and scarcely traceable to apex. *Elytra* with punctures, striae, and interstices much as in *flavonotatus*. *Metasternum* with a rather strong oblique ridge on each side between coxae, and with a rather small tubercle between each ridge and medio-basal impression; punctures of episterna not continuous. *Abdomen* with an irregular (semi-double) row of punctures across each of the third and fourth segments, basal segment gently concave. *Legs* stout; femora strongly dentate; hind tibiae strongly dilated to apex. Length, 6-8 mm.



♀. Differs from the male much as in the two preceding species.

*Hab.*—Queensland: Kuranda (G. E. Bryant, H. H. D. Griffith from F. P. Dodd); Cairns (E. Allen, A. M. Lea). Type, I. 1303.

A rather pretty species, allied to the two preceding ones, but without latero-apical spots of pale scales on prothorax. It is also allied to *microthorax*, but is narrower, prothorax considerably larger in proportion, and clothing very different. There are usually at least four distinct dark spots on the elytra (or six counting the shoulders), and these spots are rendered more distinct by their entire absence of clothing; the suture is frequently dark; the prothorax is usually darker than the elytra, but its depth of colour is uniform on the individual; the base and apex of femora and of abdomen are usually darker than the adjacent parts. On some specimens the head appears to have traces of a feeble medio-frontal carina.

TYRTÆOSUS SUBOPACUS, n. sp.

♂. Of a dingy piceous-brown or black, somewhat diluted with red in places, antennæ and tarsi paler. Prothorax with fairly stout stramineous setæ, on each side in front a feeble spot of stouter and paler scales. Elytra with fairly numerous fawn-coloured scales scattered about, and condensed into numerous small spots, with a few sooty scales in parts. Under-surface with irregularly distributed scales, varying from white to sooty. Legs rather densely clothed, mostly with whitish setæ.

*Head* with coarse dense punctures in front; with or without a feeble median carina; a distinct depression behind each eye; these moderately close together in front. Rostrum moderately long; basal half with dense coarse punctures, somewhat linear in arrangement, apical half with smaller, but more clearly defined, ones. Club rather elongate. *Prothorax* with sides strongly and evenly rounded on basal three-fourths, but apex suddenly narrowed; with large round punctures, nowhere confluent; with a strongly raised, narrow, median carina. *Elytra* elongate-cordate, not much, but suddenly, wider than prothorax; with rows of large deep punctures in shallow striæ, becoming smaller posteriorly; third and fifth interstices distinctly, the second and seventh less noticeably raised above their fellows, and with transverse squamiferous granules. *Metasternum* with a strong oblique ridge on each side between coxæ, with a very feeble tubercle between each ridge and medio-basal impression; episterna each with a continuous row of strong punctures. *Abdomen* with basal segment flat and polished in middle, and suddenly

and strongly elevated above second. third and fourth each with a single row of punctures across middle. *Legs* stout; femora strongly dentate: all tibiae rather thin, lightly curved, and somewhat narrowed to apex. Length,  $5\frac{1}{4}$ - $6\frac{1}{2}$  mm.

♀. Differs from the male in being somewhat stouter, the rostrum somewhat thinner, longer, shining, and with smaller and sparser punctures, especially towards the base; antennae inserted not quite so close to apex of rostrum; basal segment of abdomen rather strongly convex, not polished, and but feebly elevated above second

*Hab.*—Queensland: Cairns district (A. M. Lea); Kuranda (H. H. D. Griffith from F. P. Dodd). Type, I. 1304.

In general appearance fairly close to several species of the genus, but abdomen of the male highly distinctive. The spots of pale scales on the elytra are not confined to the striae, but are frequently continued across several interstices, giving the surface a transversely fasciate appearance. The latero-apical spots on the prothorax are rather feeble, and each is composed of about six scales. The elytra appear to have four dark spots, but these are due more to absence of pale scales than to any other reason. There is a distinct depression behind each eye, narrow and rather deep towards the sides, and dilating towards the middle, so that the whole front of the head is somewhat depressed: this appearance, however, is somewhat obscured by the clothing. Some of the large, subbasal, elytral punctures are supplied with a small granule at the middle of each side.

#### TYRTEOSUS ALTERNATUS, n. sp.

Piceous-brown, in places obscurely diluted with red; antennae reddish. Moderately densely clothed with stramineous scales, on the prothorax each scale arising from a puncture; on the elytra somewhat irregularly distributed, and in parts mixed with sooty scales.

*Head* with dense and coarse punctures: a rather narrow depression behind each eye. Rostrum moderately long, sides regularly incurved to middle; with dense and coarse punctures, becoming crowded and irregular towards base, but more or less linear in arrangement; an impunctate median line from near base to near apex. *Prothorax* with strongly rounded sides; with dense, round, and rather large non-confluent punctures; with a distinct and narrow median carina. *Elytra* subcordate, base distinctly wider than prothorax, basal half almost parallel-sided; with rows of large and somewhat angular punctures, becoming more rounded

on sides and smaller posteriorly; interstices as wide as, or wider, than seriate punctures, feebly wrinkled, with small granules, the alternate ones lightly but distinctly elevated, and carinated along middle. *Metasternum* obtusely ridged on each side between coxæ; episterna each with a continuous row of punctures. *Abdomen* with first segment rather short, flat in middle; second not much longer than third, third and fourth rather larger than usual, and each with two distinct rows of punctures across middle. *Legs* stout; femora strongly grooved and feebly dentate; four front tibiæ feebly, the others moderately, dilated at apex. Length, 6 mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1305.

In size and general appearance strikingly close to *pollux*, but with the third and fifth interstices elevated above the adjacent ones. The teeth of the four front femora are very small and acute, but on the hind pair they are very feeble.

TYRTÆOSUS PUNCTIROSTRIS, n. sp.

Black, elytra in places diluted with red; antennæ and tarsi reddish. Moderately clothed with scales and setæ, mostly ashen or ochreous, but in places sooty.

*Head* with large but comparatively shallow punctures in front, becoming smaller posteriorly. Eyes separated almost the width of rostrum at base; a feeble depression behind each. Rostrum comparatively short and stout, slightly dilated to apex; with dense and coarse punctures of almost even size throughout. Antennæ rather short; club large. *Prothorax* strongly transverse, sides feebly increasing in width from base to apical third, and then suddenly narrowed; with dense, large, non-confluent punctures; median carina very feeble, and traceable only about middle. *Elytra* elongate-cordate, each separately rounded at base, and without subhumeral incision; with rows of large punctures, in rather shallow striæ, and becoming smaller posteriorly; interstices much narrower than striæ, and each with a row of small punctures. *Metasternum* with very obtuse ridges on each side between coxæ; episterna each with an interrupted row of sparse punctures. *Abdomen* with first segment rather short and feebly depressed along middle, third and fourth each with two rows of setiferous punctures. *Legs* stout; femora rather lightly dentate; hind tibiæ feebly dilated to apex. Length, 5 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1306.

With an unusually stout and coarsely-punctured rostrum, much as in *crassirostris* (the punctures are quite as coarse

between antennæ as at the base), but readily distinguished from that species by the dentate femora. The colour and markings are somewhat suggestive of *nigromaculatus*, but the rostrum is very different. The type is almost certainly a male, but appears to be somewhat abraded

TYRTÆOSUS FOVEIPENNIS, n. sp.

♂. Jet-black, in parts sometimes diluted with red; antennæ and tarsi reddish. Not very densely clothed with scales, more or less ochreous on upper-surface, and paler on under-surface and legs.

*Head* with dense punctures, becoming fairly large in front; a distinct medio-frontal carina; a depression behind each eye, nowhere deep, becoming very shallow towards, and meeting at, carina. Eyes separated the width of rostrum at its extreme base. Rostrum rather long, noticeably dilated in front of antennæ, base notched on each side; basal half with dense and coarse punctures, somewhat linear in arrangement, and leaving a narrow median carina, elsewhere with smaller and sharply-defined punctures, sparser between antennæ than elsewhere. *Prothorax* almost as long as wide, sides strongly rounded; with dense, large, round, non-confluent punctures; median carina strong. *Elytra* elongate, not much wider than prothorax, each separately rounded at base and without humeral notches, sides feebly rounded (almost parallel) to beyond the middle, with rows of large, deep punctures or foveæ on basal half; interstices much narrower than seriate punctures or foveæ, each with a row of distinct punctures. *Metasternum* with a moderate ridge on each side between coxæ; episterna each with an interrupted row of large punctures. *Abdomen* with first segment rather small and depressed in middle, third and fourth each with two rows of setiferous punctures across middle. *Legs* stout; femora rather lightly dentate; hind tibiæ moderately dilated to apex. Length, 9-11 mm.

♀. Differs in having rostrum slightly longer and thinner, with smaller and sparser punctures, and abdomen with basal segment moderately convex.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1307.

A large elongated species, at first sight apparently belonging to *Mechistocerus*, but with very different mesosternal receptacle. On the prothorax the scales form three very feeble longitudinal stripes, and an irregular transverse one (all very indistinct on slight abrasion). On the elytra they are usually condensed into small spots or feeble transverse fasciæ. The punctures are very large on the basal half (or two-thirds) of

the elytra, where each is separated from its fellows by a transverse ridge that is almost level with the interstices; so that there the elytra do not appear to be striated, but posteriorly the punctures become much smaller and the striation more evident. The rows of punctures on the interstices cause these, from some directions, to appear as narrow, slightly undulating ridges.

TYRTEOSUS BIVULNERATUS, n. sp.

Black, parts of elytra and of legs obscurely diluted with red, antennæ and tarsi reddish. Moderately clothed with reddish-ochreous setæ, on the prothorax forming three feeble longitudinal stripes, and on the elytra many compacted into feeble spots.

*Head* with dense and fairly coarse punctures; a curious impression behind each eye. Eyes separated the width of rostrum at extreme base. Rostrum rather long and thin, a distinct notch on each side of base; basal half with fairly coarse punctures, subseriately arranged, elsewhere with smaller but more sharply-defined ones, but almost impunctate along middle. *Prothorax* moderately transverse, sides strongly rounded, base strongly bisinuate and more than thrice the width of apex; with dense, large, round punctures, in places more or less confluent; with a very strong median carina. *Elytra* not much wider than prothorax, sides feebly rounded to beyond the middle, with a very distinct subhumeral notch on each side of base; punctures and interstices peculiar. *Metasternum* with a rather feeble ridge on each side between coxæ; episterna each with an interrupted row of punctures. *Abdomen* with first segment scarcely once and one-half the length of second, its apex lightly incurved to middle; third and fourth with comparatively dense setiferous punctures, as on rest of abdomen. *Legs* stout; femora rather strongly grooved and edentate; all tibiæ distinctly dilated to apex, the four hind ones conspicuously bidentate on outer apex. Length, 9 mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1308.

The clothing on the elytra is feebly variegated, but the setæ are scarcely stouter than those on the prothorax. The depression behind each eye is deep and sharply defined; it is narrowest at the inner portion of the eye, and dilates outwardly (instead of inwardly as in other species); in its middle there is a narrow shining costa. With the head set out but attached to the body it is more or less concealed. The prothoracic punctures, although many are round and isolated, exhibit a tendency to become more or less confluent, especially along the middle, so that, when viewed obliquely, there

appear to be numerous feeble ridges extending parallel with the median carina. The elytra at first appear to have very wide striæ and narrow interstices, but this is not the case, as the striæ are really very narrow (this is very noticeable posteriorly) and supplied with irregular punctures; these are rather large on the basal half, and each appears to be supplied with granules that really belong to the interstices. The interstices are much wider than the striæ, and each, except the suture, is more or less distinctly ridged along the middle, and with a conspicuous row of punctures on each side of the ridge. The dentition of the four hind tibiæ is suggestive of *Psepholacipus*.

TYRTÆOSUS BIFOVEICEPS, n. sp.

Black; antennæ and tarsi reddish.

*Head* with coarse and somewhat irregular punctures in front; a rather deep and somewhat pyriform impression behind each eye. Eyes separated the width of rostrum at extreme base. Rostrum rather long and thin, notched on each side of base; basal half with rather coarse punctures, subseriatly arranged, and leaving a median carina, which is distinct only at extreme base, apical half with small punctures, but absent along middle. *Prothorax* and *elytra* with outlines much as in preceding species; *metasternum*, *abdomen*, and *femora* much the same. All tibiæ dilated to apex, the four hind ones not bidentate at outer apex. Length, 9 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1309.

The types of this and the preceding species are uniques; their shape and general appearance are much the same, and the sculpture of the present species might be regarded as simply an exaggeration of that of the preceding; but the four hind tibiæ are so different, *inter se*, that I have not hesitated to describe them as distinct. The depression behind each eye is much as in the preceding species, but is rather less sharply defined; the one behind the right eye is somewhat obscured by an oblique (but not shining) ridge, but the other is simple. The type is certainly somewhat abraded, but the clothing that is left consists of more or less ochreous setæ, and was apparently very similar to that of the preceding species. The prothoracic punctures are rather larger than in that species, and with a less tendency to become confluent. The elytra about the basal half appear to have striæ much wider than the interstices, owing to the punctures there (although large) not being sharply defined, but on the apical half of the elytra the striation is deep, narrow, and sharply defined, the interstices much wider than the striæ, and, except the suture, each

ridged along middle. The type of the present species is probably a male, as the basal segment of its abdomen is distinctly depressed in the middle; in the type of the preceding species it is gently convex.

TYRTÆOSUS SQUAMICEPS, n. sp.

Of a dingy reddish-brown, antennæ and tarsi paler, elytra in parts stained with black. Moderately clothed with fawn-coloured or pale-ochreous scales, on the prothorax forming three feeble longitudinal stripes (the interspaces mostly with sooty scales) and on the elytra usually compacted into many feeble spots, on the head (except between eyes) denser than elsewhere.

*Head* with dense punctures, normally concealed by clothing. Eyes separated the width of rostrum at extreme base. Rostrum not very long and rather wide, sides lightly incurved to middle, with rather coarse and dense punctures about base, but small elsewhere. *Prothorax* almost twice as wide as long, sides strongly rounded, apex about half the width of base; punctures not very large, shallow, and more or less concealed; without median carina. *Elytra* very little wider than prothorax, subhumeral notches distinct, sides lightly rounded; striation deep and narrow, with more or less concealed punctures; interstices flattened, about twice the width of striae, and with more or less concealed punctures and granules. *Mesosternal receptacle* shorter and less elevated than usual. *Metasternum* scarcely ridged on each side between coxæ; episterna each with a somewhat irregular row of punctures. *Abdomen* with first segment slightly flattened in middle, apex lightly incurved to middle; third and fourth each with a row of strong punctures across middle. *Legs* moderately stout; femora feebly grooved and feebly dentate; tibiae rather thin, all slightly narrowed to apex. Length, 3½-4 mm.

♀. Differs in having the rostrum somewhat thinner, sides less noticeably incurved to middle and with sparser punctures, and abdomen with basal segment moderately convex.

*Hab.*—North Queensland (Blackburn's collection); Cairns district (A. M. Lea). Type, I. 1310.

In general appearance close to *castor*, but with femoral teeth much smaller and elytra without two distinct white spots. Each elytron appears to have a large dark medio-lateral space, due partly to being there stained with black, and partly to its clothing being sparse and mostly sooty. The depression behind each eye is extremely feeble, and might fairly be regarded as absent.

## TYRTÆOSUS CONCINNUS, n. sp.

Velvety-black, in places obscurely diluted with red; antennæ and tarsi reddish. With rather dense, fawn-coloured scales, on the prothorax forming three distinct longitudinal lines, and on the elytra closely compacted into numerous small spots; prothorax between the stripes and elytral interstices with longer and usually paler scales. Head and legs densely, the under-surface rather sparsely, clothed.

*Head* with dense but more or less concealed punctures. Eyes widely separated, no depression behind them. Rostrum moderately long, sides distinctly increasing in width towards, but notched at, base; basal third with rather coarse and somewhat crowded punctures, elsewhere with sparse and more or less minute punctures, but absent from middle. *Prothorax* strongly transverse; median carina absent. *Elytra* subcordate, not much wider than prothorax, with rows of large, deep punctures, becoming much smaller posteriorly; interstices on basal half much narrower than striæ, but becoming wider and flatter till on the posterior declivity they become distinctly wider than the striæ. *Mesosternal receptacle* and *abdomen* as in preceding species. *Metasternum* not ridged on each side between coxæ; episterna each with an interrupted row of punctures. *Legs* moderately long; femora rather feebly grooved and lightly dentate; tibiæ all somewhat narrowed to apex. Length,  $5\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I 1311.

A rather pretty little species, at first appearing like a large specimen of the preceding one; but clothing denser (notably on the legs), elytral interstices narrower, and antennal insertion not quite the same. The clothing if at all constant (it is evidently in perfect condition on the type) should render the species every distinct. To the naked eye the prothorax appears to have a dark spot on each side of the base, the derm there being glabrous; on the elytra the fawn-coloured scales form numerous small spots, and one larger one on the middle of each; each of the larger ones is rendered more conspicuous by a small spot of sooty scales before and one after it, there is also a similar sooty spot common to the second and third interstices at about one-fifth from the apex. The prothoracic punctures are so placed that each appears to be bounded behind by a transverse or semi-circular granule, these being very conspicuous from in front.

## TYRTÆOSUS BREVIROSTRIS, n. sp.

♂. Black, sometimes obscurely diluted with red; antennæ and tarsi reddish. Rather densely clothed with stout



fawn-coloured and sooty scales, the sooty ones very sparse on under-surface.

*Head* with coarse more or less concealed punctures. Eyes widely separated, a narrow normally-concealed depression behind each. Rostrum rather short, wide, and almost straight; with dense and coarse punctures, but on basal third concealed. *Prothorax* almost as long as wide, sides strongly rounded; with dense, round, deep, non-confluent punctures; median carina scarcely, or not at all, traceable. *Elytra* parallel-sided to near apex, not much wider than prothorax, subhumeral notches almost absent; with rows of large, deep punctures; interstices in places wider, in places narrower, than punctures, with sparse granules, but surface more or less concealed by clothing. *Mesosternal receptacle* larger and more elevated than usual. *Metasternum* with a conspicuous ridge on each side between coxæ; episterna each with a continuous row of punctures. *Abdomen* with basal segment not as long as second and third combined, depressed in middle, apex lightly incurved to middle; third and fourth each with two rows of squamiferous punctures. *Legs* stout; femora strongly dentate; hind tibiæ lightly dilated to apex. Length, 4-4½ mm.

♀. Differs in having the rostrum slightly thinner, shining, and with concealed punctures only at extreme base, the punctures elsewhere small but clearly defined; antennæ inserted just perceptibly nearer base than apex of rostrum (instead of in the exact middle), and basal segment of abdomen moderately convex.

*Hab.*—Queensland: Cairns district (F. P. Dodd and A. M. Lea); Little Mulgrave River (H. Hacker). Type, I. 1312.

The mesosternal receptacle is unusually stout, and the rostrum unusually short for the genus. It is a subcylindrical species, with clothing so dense as to greatly obscure the derm of the elytra. The sooty scales are distributed in small patches on the upper-surface, causing this, to the naked eye, to appear speckled; the interstices each have a row of stout scales, but as these are similar in colour to the surrounding ones they are but little evident; each elytral puncture is also supplied with a scale. The junction of the fourth and fifth interstices on the posterior declivity is marked by a small spot, conspicuous to the naked eye, of pale scales, encircled by dark ones, and is alike on all six specimens under examination. The punctures of the under-surface are larger and denser than usual.

## TYRTÆOSUS APICICOLLIS, n. sp.

Reddish-brown, in parts obscurely stained with darker brown. Moderately clothed with fawn-coloured scales.

*Head* with numerous, but not crowded, punctures of moderate size; a rather narrow depression behind each eye. Eyes separated the width of extreme base of rostrum. Rostrum moderately long, thin, and parallel-sided, notched on each side of base; basal half with coarse crowded punctures, apical half with much smaller, but sharply defined, ones. *Prothorax* moderately transverse, with dense, large, round, non-confluent punctures; median carina very feeble, and not traceable to base or apex; near apex deeply transversely impressed across middle. *Elytra* about one-fourth wider than prothorax, sides parallel to beyond the middle, subhumeral sinus scarcely traceable; with rows of large, but partially concealed, punctures; interstices much wider than punctures, each with a partially concealed median row of granules. Metasternum without a conspicuous ridge on each side between coxæ; punctures of episterna interrupted. *Abdomen* rather large, first segment not as long as second and third combined, second much shorter than third and fourth combined; these each with two irregular rows of squamiferous punctures across middle. *Legs* comparatively thin. femora feebly dentate, tibiæ not dilated to apex. Length, 5 mm.

*Hab.*—Australia (Blackburn's collection). Type, I. 1313.

The apex of the prothorax is conspicuously elevated in front, owing to the deep subapical impression. The clothing on the upper-surface on the type is not variegated, but, as it is not uniformly distributed, the surface appears somewhat speckled. The head and exposed parts of the body have a bluish iridescence, but it is very faint and could easily be overlooked.

## TYRTÆOSUS MODICUS, n. sp.

Piceous-brown, in parts obscurely diluted with red; antennæ and tarsi of a dingy-red. Prothorax with a dingy scale in each puncture, not, or scarcely, rising to general level, but with a feeble median line of longer and paler scales, and remnants of a line on each side. Elytra with rather dense and somewhat ochreous scales, with irregular spots or patches of sooty ones. Under-surface and legs with pale scales, sparser on abdomen than elsewhere.

*Head* with dense and rather coarse punctures. Eyes separated the width of extreme base of rostrum, a narrow depression behind each. Rostrum not very long, fairly stout, almost parallel-sided; basal half with coarse partially-concealed punctures, apical half with smaller (but not very

small) sharply-defined ones. *Prothorax* moderately transverse, sides strongly rounded; with dense, large, round, non-confluent punctures; median carina not very strong, but traceable from base to apex. Elytra about one-third wider than prothorax, sides parallel to near apex, subhumeral sinus scarcely traceable; with rows of large, deep punctures, becoming smaller posteriorly. *Metasternum* without an elevated ridge on each side between coxæ; punctures of episterna interrupted. *Abdomen* with second segment almost as long as third and fourth combined; these each with one row of punctures across middle. *Legs* not very stout; femora rather strongly grooved and feebly dentate, hind tibiæ slightly dilated at apex. Length,  $4\frac{3}{4}$  mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1314.

On the elytra there appear to be several irregular dark patches, due partly to patches of sooty scales, and partly to absence of paler ones. The scales more or less obscure the sculpture, but the interstices are mostly wider than the seriate punctures, and each appears to be supplied with a median row of granules. A second specimen from Mount Tambourine differs in being smaller ( $4\frac{1}{2}$  mm.), the scales on the elytra mostly sooty, the ochreous ones being distributed in irregular transverse spots or fasciæ, and a row of small granules on each interstice is seen where the derm has been abraded. The punctures on its head are somewhat smaller than on the type; its abdomen is flattened in the middle of the first segment, and on the type that segment is uniformly convex, but this difference is probably sexual.

#### TYRTÆOSUS FOVEIVENTRIS, n. sp.

Black or blackish, antennæ and tarsi reddish. Densely clothed with sooty scales, interspersed with white ones.

*Head* with dense but more or less concealed punctures. Eyes separated almost the exact width of extreme base of rostrum, a narrow but partially-concealed impression behind each. Rostrum moderately long; basal third with coarse, partially-concealed punctures, elsewhere with rather small but clearly-defined ones. *Prothorax* small, about as long as wide, sides strongly rounded; with large round punctures, very close together, but nowhere confluent; median carina rather feeble but traceable from base to apex. *Elytra* about one-third wider than prothorax, base lightly trisinate, sides parallel to beyond the middle; punctures and interstices partially concealed. *Metasternum* with the dividing lines between the median and lateral portions very distinct, but not marked by elevated ridges; punctures of episterna

interrupted. *Abdomen* with basal segment depressed along middle, second about once and one-third the length of third or fourth, these each with two rows of squamiferous punctures across middle; apical segment with a large shallow fovea. *Legs* moderately stout, femora rather strongly grooved, the front ones moderately, the others lightly, dentate; hind tibiae moderately dilated at apex, the front ones lightly, the middle ones not at all. Length,  $6\frac{1}{2}$ -7 mm.

*Hab.*—New South Wales: Blue Mountains (Blackburn's collection); Victoria (H. W. Davey). Type, I. 1315.

In general appearance close to *pollux*, but prothoracic carina shorter and less distinct; elytra more roughly sculptured and with narrower interstices, and metasternal episterna with punctures not continuous. Also close to *cinerascens*, but interstices not carinated towards base, and the space there flattened and irregularly punctate and squamose; this will also distinguish it from *pardalis*. The white scales are irregularly distributed in small spots on the elytra, causing these to appear speckled; on the prothorax there are three vague lines of pale scales (individually longer than those on elytra), but most of the scales are sooty and do not rise above their containing punctures. On the under-surface, and on the under-parts of the legs, the scales are mostly grey or of a dingy-white. The elytral punctures are fairly large, and appear to be more or less angular or quadrate, but the clothing is so distributed that few can be seen clearly; the interstices are usually wider than the punctures, and, where intentionally abraded, are seen to be covered with short transverse ridges or granules, so that the whole elytra have a peculiarly rough appearance; although their punctures (in comparison with those of many others of the genus) are not particularly large. The (three) specimens under examination appear to be all males.

TYRTEOSUS BASIVENTRIS, n. sp.

♂. Piceous; elytra red, in places deeply and irregularly stained with black; antennæ and tarsi reddish. Elytra with somewhat ochreous scales congested into feeble spots; prothorax feebly clothed. *Legs* with thin, whitish scales or setæ.

*Head* with rather small and sparse punctures; interocular fovea rather large. Eyes separated the width of extreme base of rostrum: a deep angular impression behind each. Rostrum moderately long, distinctly notched on each side of base; basal third with coarse crowded punctures, elsewhere with small but usually clearly-defined ones. *Prothorax* strongly transverse, sides strongly rounded: with dense, large, round, non-confluent punctures: median carina very feeble,

but traceable throughout. *Elytra* with base strongly trisinate, closely applied to and scarcely wider than prothorax; sides almost parallel to beyond the middle; with rows of rather large and somewhat distant punctures, in distinct striæ; interstices much wider than seriate punctures, ridged along middle, with a more or less obscure row of punctures on each side of each ridge. *Metasternum* very feebly ridged on each side between coxæ; punctures of episterna interrupted. *Abdomen* with basal segment distinctly produced in middle of apex, so that there its length is almost equal to that of the three following combined, narrowly depressed along middle, each side of depression marked by a row of sparse but very distinct scales, becoming rather numerous at apex; second segment along middle very little longer than third or fourth, each of these with a conspicuous row of punctures across middle. *Legs* rather thin; femora moderately grooved and lightly dentate; hind tibiæ very feebly dilated at apex. Length, 4 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1316.

Readily distinguished from all previously described species by the abdomen of the male. At a glance the type is extremely like some of the small variegated species of *Melanterius*, and in fact, without examination of the mesosternal receptacle, it is quite impossible to decide as to whether many species belong to *Tyrtæosus* or to *Melanterius*. The derm, where not concealed by scales, appears to have a bluish iridescence, this being specially noticeable on the abdomen and on the dark parts of the elytra. The elytra are rather pretty owing to the spotting of the ochreous scales on the red derm and the many blue-black patches. On the prothorax the scales seldom rise to the general level. The depression behind each eye appears to be in the form of a triangle from certain directions. Two, near the base three, of the lateral interstices are highly polished, but this is a fairly common feature in the genus, and the amount of polish is probably due, to a certain extent, to rubbing by the femora.

Two specimens (from Kuranda) appear to be females, they differ from the type in being smaller ( $3\frac{3}{4}$  mm.), with the basal segment of abdomen gently convex in middle, without longitudinal rows of scales, and the apex very feebly produced, so that, along middle, its length is only about equal to that of the third and fourth combined, and the second is conspicuously longer than the third or fourth. The rostrum is thinner, with smaller and sparser punctures, and the elytra are conspicuously wider than the prothorax, with the base less noticeably trisinate.

## TYRTÆOSUS TRILINEALBUS, n. sp.

Black, with a slight bluish gloss. With rather sparse and irregularly distributed sooty scales; but prothorax with three conspicuous lines of white scales; a short oblique line of white scales on each elytron close to scutellum, and similar scales on suture on the posterior declivity. Legs with whitish and sooty setæ.

*Head* with small partially-concealed punctures. Eyes with rather smaller facets than usual, separated less than width of rostrum at base. Rostrum not very long, sides distinctly incurved to middle; with rather small clearly-defined punctures, becoming larger and partially concealed about base. Antennæ inserted almost in exact middle of rostrum; club rather large. *Prothorax* rather strongly transverse, apex more than half the width of base; with moderately large, round, deep, sharply-cut punctures, becoming very small and sparse at apex; without median carina. *Elytra* cordate, each separately rounded at base, and without subhumeral incurvature, sides evenly rounded; with rows of rather narrow, suboblong punctures, in narrow, shallow striæ; interstices flat, wider than striæ, the second widest of all. *Metasternum* about two-thirds the length of the following segment; without an elevated ridge on each side between coxæ; punctures of episterna almost continuous. *Abdomen* with first segment slightly longer than second and third combined, gently convex in middle, second subequal to third and fourth combined; each of these with a row of punctures across middle. *Legs* moderately long; femoral teeth acute but rather small; all tibiæ parallel-sided, except at ends, and not dilated at apex. Length, 3 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1317.

Referred to *Tyrtæosus* with hesitation on account of the base of the elytra and rather finely faceted eyes. At first sight it appears to belong to *Gymnoporopterus*, but the metasternum is rather long, with conspicuous episterna. The mesosternal receptacle has rather thinner walls and the basal portion smaller than usual, but the emargination is rather widely U-shaped; from some directions it appears to be open, but as its wall at the base is directed slightly forwards, it must be regarded as cavernous. The tarsi and antennæ are almost as black as the other parts. The type, judged by the abdomen, appears to be a female.

## TYRTÆOSUS ABERRANS, n. sp.

Black, antennæ and tarsi of a rather dingy-red. Moderately clothed with sooty scales, with many feeble spots of stramineous or whitish ones. Legs and under-surface with whitish setæ.

*Head* with crowded, somewhat indistinct punctures. Eyes rather larger and with somewhat smaller facets than usual; separated about half the width of base of rostrum. Rostrum rather short and wide; basal third with coarse partially-concealed punctures, elsewhere with smaller but clearly-defined ones. Antennæ rather short; scape inserted somewhat nearer base than apex of rostrum, and scarcely half the length of funicle and club combined. *Prothorax* rather strongly transverse, basal half almost parallel-sided, punctures much as on preceding species; median carina absent. *Elytra* parallel-sided to near apex, base rather lightly trisinate, and not much wider than prothorax; with rows of suboblong punctures in rather feeble striæ; interstices feebly separately convex, distinctly wider than seriate punctures. *Metasternum* with a rather feeble ridge on each side between coxæ, punctures of episterna feeble, but apparently not interrupted. *Abdomen* with first segment feebly depressed in middle, apex very feebly incurved to middle, as long as second and third combined; second slightly longer than third and fourth combined; each of these with a very feeble row of punctures across middle. *Legs* stout; femora rather strongly dentate; tibiæ not dilated at apex, somewhat angular near outer base, but not dentate. Length,  $2\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1318.

Another minute aberrant species of the genus, but not sufficiently so to be regarded as generically distinct. The mesosternal receptacle, however, is normal. The clothing to a certain extent obscures the punctures and interstices of the elytra, but where visible the interstices do not appear to be in any way roughly sculptured.

As the Australian species of this genus have now been almost doubled since my first table of the species, and the genus is a rather difficult one, a second and enlarged table is here given. A character which at first would appear to be of considerable use in subdividing it is the median prothoracic carina; in many species it is strong and continuous, and in others entirely absent; but as there are several species in which it is so feeble that it might be regarded as absent, and others in which it varies to a certain extent individually, it has not been used.

- |  |                     |
|--|---------------------|
| A. Front femora only edentate ... ..                               | <i>urens</i>        |
| AA. All femora edentate.   |                     |
| a. Four hind tibiæ bidentate near outer apex                       | <i>bivulneratus</i> |
| aa. Four hind tibiæ not so armed.                                  |                     |
| b. Punctures of metasternal episterna continuous throughout ... .. | <i>inermis</i>      |
| bb. Punctures interrupted.   |                     |
| c. Elytral interstices conspicuously ridged ... ..                 | <i>bifoveiceps</i>  |

- cc. Elytral interstices not ridged.  
 d. Interstices each with a single row  
 of distinct punctures . . . . . *quadrato-lineatus*  
 dd. Interstices densely punctured . . . . . *crassirostris*
- AAA. All femora dentate.
- B. Elytra with large punctures, causing the  
 second, third, and fourth interstices to  
 appear to be double . . . . . *imitator*
- BB. Elytral interstices not apparently  
 doubled.
- C. Elytra with third and fifth interstices  
 conspicuously elevated above their  
 fellows.
- e. Third interstice wider and more con-  
 spicuously elevated near base than  
 elsewhere . . . . . *pulcher*
- ee. Third not especially conspicuous  
 near base.
- f. Basal segment of abdomen of male  
 suddenly elevated above second . . . . . *subopacus*
- ff. Basal segment normal.
- g. Shoulders very little (in male not  
 at all) wider than widest part  
 of prothorax . . . . . *tranquiliferus*
- gg. Shoulders distinctly wider than  
 prothorax.
- h. Femora feebly dentate . . . . . *alternatus*
- hh. Femora strongly dentate . . . . . *squamivarius*
- CC. Elytra with third and fifth interstices  
 not conspicuously elevated.
- D. Punctures of metasternal episterna  
 continuous throughout.
- i. Each of third and fourth segments  
 with a single row of punctures  
 across middle.
- j. Metasternum with an oblique  
 ridge on each side between  
 coxæ.
- k. Of medium size . . . . . *dolosus*
- kk. Of minute size . . . . . *aberrans*
- jj. Metasternum without oblique  
 ridges between coxæ.
- l. Prothorax with three conspicu-  
 ous lines of snowy scales . . . . . *trilineatus*
- ll. Prothorax without lines of  
 snowy scales.
- m. Both outer side pieces of  
 mesosternum with punc-  
 tures . . . . . *incallidus*
- mm. Inner side piece without  
 punctures.
- n. Elytra with interstices  
 much narrower than  
 seriate punctures . . . . . *concinus*
- nn. Interstices at least as wide  
 as seriate punctures.
- o. Elytra with two sub-  
 median spots of whit-  
 ish scales . . . . . *castor*



- oo. Elytra without such spots ... .. *squamiceps*
- ii. Each of third and fourth abdominal segments with two rows of punctures or densely punctured.
- p. Head carinated ... .. *carinatus*
- pp. Head not carinated.
- q. Elytral interstices each with a row of larger scales set amongst the others ... .. *laterarius*
- qq. Elytral interstices without such larger scales.
- r. Elytra with third and fifth interstices distinctly wider than the others ... .. *interstitialis*
- rr. Elytra with these interstices not distinctly wider than the others.
- s. Pronotum with majority of scales not elevated above their containing punctures ... .. *pollux*
- ss. Pronotum with majority of scales so elevated.
- t. Abdominal sutures straight.
- u. Clothing of upper-surface mostly sooty ... .. *macrops*
- uu. Clothing of upper-surface not at all sooty ... .. *ichthyosomus*
- tt. Abdomen with suture between two basal segments curved in middle.
- v. Metasternal episterna each with two conspicuous rows of punctures on posterior half ... .. *mixtus*
- vv. With one row only ... .. *brevirostris*
- DD. Punctures of metasternal episterna interrupted.
- E. Each of third and fourth abdominal segments with one row of punctures across middle.
- w. Front sides of prothorax with spots of pale scales.
- x. Pale scales condensed to form an irregular V on elytra ... .. *microthorax*
- xx. Pale scales not so condensed.
- y. Size,  $7\frac{1}{2}$  mm., or less ... .. *flavonotatus*
- yy. Size, 8 mm., or more ... .. *majorinus*
- vvc. Front sides of prothorax without pale spots.
- z. Antennæ almost black ... .. *corpulentus*
- zz. Antennæ more or less reddish.
- a. Comparatively large and robust ... .. *vetustus*

- aa. Of small size.  
   *b.* With a subtriangular depression behind each eye *basiventris*  
   *bb.* Without such a depression.  
     *c.* Some interstices entirely glabrous *albolineatus*  
     *cc.* No interstices (except on sides) entirely glabrous.  
       *d.* Elytral scales brick-red and sooty *montanus*  
       *dd.* Elytral scales grey and sooty.  
         *c.* Third and fourth abdominal segments with irregular punctures and elongate scales *ustulatus*  
         *ee.* These segments with regular punctures and rounded scales *æmulus*  
 EE. Each of third and fourth abdominal segments with two rows of punctures, or densely punctured.  
 F. Front of prothorax suddenly elevated *apicicollis*  
 FF. Front not so elevated.  
   G. Elytral punctures or foveæ very large on basal half *melanternoides*  
   GG. Elytral punctures or foveæ much smaller and more uniform.  
     H. Metasternum with a suberect tubercle on each side near hind coxæ.  
       *f.* Derm black or blackish *religiosus*  
       *ff.* Derm of elytra reddish with black markings *nigromaculatus*  
     HH. Metasternum without tubercles near coxæ, or if present extremely feeble.  
       I. Eyes separated considerably less than width of rostrum at base.  
         *g.* Funicle with first joint slightly shorter than second *cinereus*  
         *gg.* Funicle with first joint slightly longer than second.  
           *h.* Femora feebly dentate *assimilis*  
           *hh.* Femora strongly dentate *pardalis*  
       II. Eyes separated almost the width of rostrum at base.  
       J. Metasternum without distinct ridges.  
         *i.* Size, 5 mm., or less *æquus*  
         *ii.* Size, 6 mm., or more *foveiventris*

JJ	Metasternum with a distinct ridge on each side between coxæ.	
K.	Elytra densely clothed	<i>biseriatus</i>
KK.	Elytra with much of their surface glabrous.	
L.	Elytra with soft white scales condensed to form transverse markings	<i>bifasciatus</i>
LL.	Elytra without such markings	
M.	Size, less than 5 mm.	<i>punctirostris</i>
MM.	Size, more than 9 mm	
		<i>foveipennis</i>

## NOTES ON TABLE.

AAA. The dentition is very feeble in *imitator*, especially on the four hind femora.

B. Some of the other interstices have this peculiar appearance, but it is more conspicuous on the ones mentioned.

i. The sides of the segments are usually densely, or at least irregularly, punctuated.

q. On densely squamose species, such as *laterarius*, this character is not at once apparent, but on looking at the elytra from behind, the rows of larger scales are quite distinct.

DD. This character is not always to be relied upon, but it is a very useful feature, and notes are given on the species in which it is known to vary. The episternum shortly before its front triangular extension is narrowed and punctures are absent from the narrowest portion. In the other species, although the punctures are frequently denser at the ends, at least one row is traceable at the narrow part.

E. On *bifasciatus* the punctures are in irregular semi-double rows for the greater portion of these segments, but on the median fifth they sometimes appear to be in single rows.

G. The punctures on the basal half of the elytra are always large, but on *melanterioides* they are quite unusually so.

H. This is more conspicuous on the male than on the female; it has nothing to do with the acute ridge between the coxæ, the apex of which from some directions may appear to be tuberculate. On *foveipennis* a vague remnant of it is traceable.

JJ. On the majority of species of the genus there is a strong oblique ridge on each side of the metasternum between the coxæ. It was not found advisable, however, to use the character as a main feature of the table, as the gradations between acutely elevated and absent are numerous. When the metasternum is examined from the side, there is a line whence the surface appears to slope down to the margin on one side, and on the other to the middle, and this line may appear to be somewhat like a ridge, but the ridges referred to in the table are distinct and rather narrow elevations above the surface.

## TYRTÆOSELLUS, n g.

*Head* fairly large, partially concealed from above. Eyes large, widely separated, coarsely faceted. Rostrum more or less parallel-sided, moderately long and curved. Antennæ rather thin, inserted nearer apex than base of rostrum; scape the length of funicle; funicle with first joint stouter and longer than second, second longer than third; club ovate. *Prothorax* as long as wide, or feebly transverse, sides rounded, base bisinuate. *Scutellum* distinct. *Elytra* narrow, but distinctly wider than prothorax, usually parallel-sided to beyond the middle. *Pectoral canal* deep, terminated between four front coxæ. Mesosternal receptacle widely U-shaped, cavernous. Metasternum rather long, but shorter than following segment; episterna distinct. *Abdomen* rather long, two basal segments large, suture between them straight; three apical segments depressed below the others; third and fourth conjoined slightly longer than second or fifth. *Legs* long and thin; femora feebly grooved, dentate or not, posterior extending, or almost extending, to apex of elytra: tibiæ thin, feebly diminishing in width to apex. Elongate, strongly convex, squamose, fasciculate or not.

In my table of genera allied to *Cryptorhynchus* <sup>(5)</sup> would be placed in I. Of the genera placed there in appearance they are nearest to *Pezichus*, but the hind femora do not pass the elytra (in *coralis* and *nigrofasciatus* they extend to the apex, in *attenuatus* and *alternatus* almost to the apex). The rostrum although fairly long in the females is shorter than in *Pezichus*. The species are all very small in comparison with those of that genus. In the table referred to, under *ii*, two genera are placed as having edentate femora, and four as having dentate femora. I believe the four species referred to the present genus are truly congeneric, despite the facts that two have dentate, and two edentate, femora. The species with edentate femora differ from those referred to *k* in the table, *Queenslandica* (now *Orochlesis*) and *Scleropoidea*, in the narrower and more convex body, longer legs and much narrower tibiæ; from those referred to *kk* the straight suture between the two basal segments of abdomen associates them with *Tyrtæosus*. The only valid distinguishing feature that I can find between these species and *Tyrtæosus* lies in the tibiæ. In these species the tibiæ are long, thin, and gradually decrease in width from near the base to the apex, or at any rate the hind pair so decrease. In *Tyrtæosus* the tibiæ are either of even width throughout, or they dilate in width to the apex, the hind pair usually

(5) Proc. Linn. Soc. N.S. Wales 1907, pp. 401-403.

being conspicuously wider at apex than elsewhere. This difference appears very slight to found a genus upon; nevertheless the four species are so obviously closely related, and in facies and clothing certainly different, to *Tyrtæosus*, that it does not appear to be desirable to refer them to that genus. The second abdominal segment slopes down at an angle of  $45^\circ$ ; in most species of *Tyrtæosus* the descent is more gradual; the species of that genus usually also have decidedly shorter legs.

Femora dentate.

Elytra with a dark oblique post- median fascia ... ..	<i>nigrofasciatus</i>
Elytra without such a fascia ... ..	<i>coxalis</i>

Femora edentate.

Elytra with third and fifth interstices raised above their fellows ... ..	<i>alternatus</i>
Elytra without alternate interstices raised .. ... ..	<i>attenuatus</i>

#### TYRTÆOSELLUS COXALIS, n. sp.

♂. Black, antennæ and tarsi reddish, elytra partly reddish. Moderately clothed with sooty scales, with three vague lines of paler ones on prothorax, and a wide, somewhat irregular, sutural one on elytra; with stout scales interspersed, and on the elytra more or less upright. Under-surface of body and of legs mostly with whitish clothing.

*Head* with dense, normally concealed punctures. Rostrum almost parallel-sided, almost as long as prothorax; basal half with coarse concealed punctures, elsewhere with smaller but fairly dense and clearly-defined ones. Antennæ inserted one-third from apex of rostrum. *Prothorax* feebly transverse, sides strongly rounded, apex about half the width of middle; with dense, round, partially-concealed punctures; with a short and feeble median carina. *Elytra* elongate-subcordate, parallel-sided to middle; with rows of large, partially-concealed punctures, becoming smaller posteriorly. *Under-surface* with rather dense and large punctures. *Femora* lightly but distinctly dentate, hind pair extending to apex of elytra; hind coxæ each with a whitish fascicle. Length,  $2\frac{3}{4}$ - $3\frac{1}{2}$  mm.

♀. Differs in having the rostrum slightly longer and thinner, with smaller and sparser punctures, concealed only at extreme base, antennæ inserted not quite so close to apex of rostrum, and hind coxæ not fasciculate.

*Hab.*—Queensland: Cairns district (A. M. Lea); Kuranda (G. E. Bryant). Type, I. 1477.

The elytra are reddish along the middle, except about base, for a space of two or three interstices on each side of suture, the parts there usually being covered with pale scales.

## TYRTEOSELLUS NIGROFASCIATUS, n. sp.

Black, antennæ and tarsi reddish. Rather densely clothed with more or less muddy-grey scales. Each elytron with a distinct oblique fascia of sooty scales, commencing on the side about middle, and terminated on the third interstice in a fascicle; behind same a short stripe of white scales, terminated at a feebly-elevated fascicle or oblique stripe of sooty scales; near base with a fairly large fascia of sooty scales, extending obliquely to near the shoulder. A feeble dark fascia on middle of prothorax. Scutellum with snowy scales.

*Head* with normally concealed punctures. *Rostrum* about as long as prothorax, almost parallel-sided; basal half with coarse, concealed punctures, elsewhere with smaller but clearly-defined ones. *Antennæ* inserted one-third from apex of rostrum. *Prothorax* moderately transverse, sides strongly rounded, apex half the width of middle; with dense, fairly large, round punctures. *Elytra* elongate-subcordate, basal half almost parallel-sided; with rows of large, partially-concealed punctures, becoming small posteriorly. *Under-surface* with fairly dense punctures of moderate size. *Femora* lightly but distinctly dentate, hind pair extending to apex of elytra. Length,  $3\frac{1}{2}$ –4 mm.

*Hab.*—Queensland. Cairns district (A. M. Lea); Kuranda (G. E. Bryant). Type, I 1478.

The elytral clothing should render this species very distinct. Judged by the rostrum the two typical specimens are males.

## TYRTEOSELLUS ATTENUATUS, n. sp.

Blackish, in parts obscurely diluted with red; antennæ and tarsi reddish. Rather densely clothed with dingy-greyish scales, somewhat variegated with paler and darker ones; with numerous stout, semi-upright ones interspersed.

*Head* with rather coarse, normally-concealed punctures. *Rostrum* rather thin, parallel-sided; basal half with coarse concealed punctures, then with smaller but clearly-defined ones to antennæ, in front of same with minute ones. *Antennæ* inserted one-third from apex of rostrum. *Prothorax* feebly transverse, sides strongly rounded, apex almost as wide as base; with dense, round punctures; with a short and very feeble median carina. *Elytra* thin, sides about basal fourth almost parallel-sided and then narrowed to apex; with rows of large, almost-concealed punctures, becoming very small posteriorly. *Under-surface* with fairly dense punctures of moderate size. *Femora* edentate, hind pair extending almost to apex of elytra. Length,  $3\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type. I. 1479.

The elytral attenuation commences nearer to the base than in other species of the genus. Parts of the elytra appear to be obscurely diluted with red, especially where the scales are paler than elsewhere. The type (whose sex is doubtful) is unique, but its shape should be distinctive. The clothing may not be constant: on each elytron there appears to be a vague triangle of sooty-brown scales extending from the side (from near the base to beyond the middle) to the third interstice slightly beyond the middle, behind this triangle the scales are paler than elsewhere, so that a wide sutural space on the posterior declivity is clothed with scales that appear almost white to the naked eye.

SOPHRONOCIS, n. g.

*Head* rather large. Eyes moderately large, coarsely faceted. Rostrum short, wide, and almost straight. Antennæ moderately stout, inserted about middle of rostrum; scape distinctly shorter than funicle, two basal joints of funicle elongate, the others very short; club ovate. *Prothorax* transverse, sides rounded, apex lightly produced, base strongly bisinuate. *Scutellum* distinct. *Elytra* elongate-cordate, base distinctly wider than prothorax. *Pectoral canal* deep and wide, terminated just behind front coxæ. Mesosternal receptacle rather strongly raised, emargination semicircular; cavernous. Metasternum about the length of the following segment; episterna distinct. *Abdomen* with first segment as long as second and third combined, its apex lightly incurved to middle, second as long as third and fourth combined. *Legs* rather long and thin; femora neither grooved nor dentate, hind pair not extending to apex of abdomen; tibiæ lightly compressed.

Close to *Tyrtæosus*, but suture between first and second segments of abdomen not quite straight, and the femora edentate. In the table of genera allied to *Cryptorhynchus* <sup>(6)</sup> would be associated with *Scleropoides*, from which it differs in the much shorter rostrum and scape, and non-grooved femora.

SOPHRONOCIS ALBONOTATUS, n. sp.

Black, in places feebly diluted with red; antennæ and tarsi red. Moderately clothed with black suberect scales, variegated with small spots of whitish ones.

*Head* with dense punctures, of moderate size between eyes, smaller elsewhere; ocular fovea fairly large. Rostrum

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(6) Proc. Linn. Soc. N.S. Wales 1907, pp. 401-403.

wide, almost as long as prothorax, sides diminishing in width from base to antennæ, then obliquely dilated to apex: basal third with dense and rather coarse punctures, elsewhere with small, and rather sparse ones. *Prothorax* moderately transverse, convex, apex about half the width of middle; with dense partially-concealed punctures. *Elytra* almost thrice the length of prothorax and about one-fourth wider, base trisinate, median sinus more pronounced than the others: with rows of large, partially-concealed punctures; interstices narrower than punctures, except posteriorly. *Under-surface* with somewhat irregularly distributed punctures, larger on basal segment of abdomen than elsewhere. Length, 3 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1518.

On the type, whose sex is doubtful, there are eight whitish spots on the prothorax: four across middle, three near apex, and an elongated medio-basal one. On each elytron there is a small median and two subapical spots, but a few white scales are scattered singly elsewhere. On the under-surface the scales are sparse and mostly whitish. There are three feeble whitish spots on the head.

#### LEUCOTHYREOCIS, n. g.

*Head* fairly large, but almost concealed from above. Eyes rather small, widely separated, coarsely faceted. Rostrum of moderate length and width, distinctly curved. Antennæ moderately thin; scape inserted nearer apex than base of rostrum and shorter than funicle; two basal joints of funicle elongate; club ovate. *Prothorax* lightly transverse, base bisinuate, sides rounded, apex produced. *Scutellum* distinct. *Elytra* strongly convex, narrowly cordate, each separately rounded at base. *Pectoral canal* deep and wide, terminated between middle coxæ. Mesosternal receptacle scarcely elevated above coxæ, base rather large, emargination widely transverse; cavernous. Metasternum long; episterna distinct. *Abdomen* large, sutures straight, first segment as long as second and third combined, second as long as third and fourth combined. *Legs* rather short; femora strongly grooved and edentate; tibiæ almost straight.

Rather close to *Tyrtæosus*, but femora edentate and strongly grooved. In the table of genera allied to *Cryptorhynchus*<sup>(7)</sup> would be associated with *Queenslandica* and *Scleropoides*; from both of which it is distinguished by the straight apex of first abdominal segment, and elytra not trisinate at base. At a glance the typical species appears

(7) Proc. Linn. Soc. N.S. Wales 1907, pp. 401-403.



to belong to *Athyreocis* of the *Poropterus* group, but the metasternum is long, scutellum present, femora strongly grooved, and abdomen different. It also resembles some of the densely-clothed species of *Ampagia*, but the abdomen and femora are normal. The metasternum and basal segment of abdomen at first appear to be of the same length, but in the exact middle the metasternum is a trifle shorter.

LEUCOTHYREOCIS CONVEXUS, n. sp.

♂. Of a dingy reddish-brown, parts of under-surface almost black. Densely clothed with light-brown or fawn-coloured scales, variegated in places with paler and darker ones, but on scutellum conspicuously white. With numerous stout, erect scales interspersed.

*Head* with dense, concealed punctures. Rostrum almost the length of prothorax, sides gently incurved to middle; basal two-thirds with coarse partially-concealed punctures, elsewhere with smaller, clearly-defined ones. Scape inserted about two-fifths from apex to rostrum. *Prothorax* strongly convex, very little wider than long; with dense, concealed punctures. *Elytra* distinctly wider than prothorax, shoulders rounded, sides decreasing in width from near base, with rows of rather large, partially-concealed punctures, in distinct but shallow striæ; interstices with dense, concealed punctures. *Under-surface* with rather coarse but more or less concealed punctures. Length, 2 mm.

♀. Differs in having the rostrum somewhat thinner, punctures smaller and concealed for a shorter distance, and antennæ inserted slightly nearer to middle of rostrum. The abdomen also is rather more convex.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1538.

On the prothorax the erect scales are more numerous across the middle and at apex than elsewhere, but they do not form fascicles. On each elytron, however, there is a distinct black fascicle on the third interstice about the middle. On two specimens there are fairly distinct and rather numerous pale spots on the elytra, but on another almost all the depressed scales, on the upper-surface, are more or less of a dingy-grey.

GYGÆUS. (8)

The original diagnosis of this genus simply pointed out two characters of the abdomen in which it differed from *Tyrtæosus*. As at least two species occur in Queensland, some additional particulars may be given.

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(8) Pascoe, Ann. Mus. Civ. Gen. 1885, p. 273.

Forehead somewhat sinuous. Eyes rather coarsely faceted. Elytra much wider than prothorax, base trisinate. Mesosternal receptacle somewhat depressed in front, walls rather thin and U-shaped; cavernous. Metasternum somewhat shorter than the following segment; episterna wide. Legs moderately long; femora obtusely dentate. Body winged.

GYGÆUS PRODIGUS, Pasc.<sup>(9)</sup>

I am indebted to Dr. Gestro for a Fly River co-type of this species. It, and four specimens from the Coen River (North Queensland), all have the rostrum black, whereas the type was described as having it castaneous, but this may have been due to immaturity or to individual variation. The sulcus at its apical sides is simply a feeble continuation of the scrobe. The second joint of the funicle is distinctly longer than the first. On the prothorax there is a feeble median carina, which at the base appears as a scutellar lobe, and at the apex as a fasciculated crest. On each side of the suture, near the base, there are some small, shining granules, varying in number from three to six.

GYGÆUS SQUAMIVENTRIS, n. sp.

♂. Black; antennæ and tarsi more or less reddish. Densely clothed with rusty-brown or light-brown scales, more or less conspicuously variegated with greyish or stramineous ones, elytra in places with sooty scales. With numerous stout, suberect scales scattered about, and on swellings condensed into fascicles. Abdomen with sooty scales, except at base and sides.

*Head* with concealed punctures; forehead lightly sinuous. Rostrum long and rather thin, sides lightly incurved to middle; apical third with dense and not very small punctures, elsewhere punctures concealed, but with a distinct median carina. Scape inserted about two-fifths from apex of rostrum, the length of funicle; first joint of funicle slightly shorter than second; club elongate, sutures oblique. *Prothorax* moderately transverse, sides strongly rounded; with a short median carina; with feeble swellings, supporting four distinct fascicles across middle, and two at apex; with large, dense, concealed punctures. *Scutellum* moderately large. *Elytra* about once and one-half as wide as long, distinctly wider than prothorax; with rows of large, partially-concealed punctures; suture with numerous shining granules on basal half and with a distinct fascicle crowning the posterior declivity; third interstice with a distinct fascicle near middle,

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(9) *L.c.* pl. II. f. 10.

and a larger one, mixed with granules, near base; fifth with two rather small fascicles. *Femora* rather lightly dentate. Length, 9½-11 mm.

♀. Differs in having the rostrum distinctly thinner, punctures concealed only on basal third, elsewhere polished, and with minute punctures. Scape inserted slightly nearer the middle of rostrum, and abdomen a trifle more convex.

*Hab.*—Queensland: Cairns (E. Allen, J. A. Anderson, F. P. Dodd, H. Hacker, and A. M. Lea). Type, I. 1540.

Readily distinguished from *prodigus* by the prothorax being bifasciculate in front instead of crested. The upper-surface is much like that of many species of *Desmidophorus*. The fascicles and the paler scales give the upper-surface a somewhat mottled appearance. The patch of sooty scales on the abdomen covers most of its surface. On the flanks of prothorax there is a vague, sooty stripe, obliquely continued on to each shoulder; and near apex of elytra there is a narrow, transverse stripe of similar scales. On old or dirty specimens, however, the clothing of the upper-surface appears to be of a more or less uniform muddy-brown. The situation of the forehead is traceable, although partially masked by scales.

CRYPTORHYNCHUS APICIPENNIS, n. sp.

Black; antennæ and parts of tarsi reddish. Apex of prothorax and posterior declivity of elytra with dense stramineous scales, fasciculate in places; rest of upper-surface glabrous, or sparsely and indistinctly clothed. Under-surface with sparse, sooty scales, and a few stramineous spots. Legs rather sparsely clothed.

*Head* with dense punctures and an obtuse median ridge. Rostrum rather long; with crowded and rather coarse punctures, becoming smaller in front; with a rather feeble median ridge. *Prothorax* moderately transverse, sides strongly rounded; with a continuous median carina, narrow at each end, and thickened in middle; with numerous large granules, each with a frontal puncture. *Scutellum* round, very distinct, and within a depression. *Elytra* elongate-cordate, about one-third wider than prothorax; with semi-double rows of very large punctures or foveæ, becoming small posteriorly; with a few irregularly distributed granules. *Legs* long; femora rather lightly dentate. Length, 10 mm.

*Hab.*—Victoria (Blackburn's collection from C. French). Type, I. 1521.

The sculpture is unusually coarse, on part of the elytra being suggestive of that of *Melanterius semiporcatus*, and this, with the curious clothing, render the species very distinct.

The patch on the elytra is widest near its summit, then narrowed to about halfway to the apex, and then almost parallel-sided to the apex itself. The mesosternal receptacle is peculiar, it slopes gently upwards from base to apex, with the walls in front abruptly vertical to near the bottom, but there each is directed forwards, like a short wedge. But it is probable that these wedge-like processes are concealed by the front coxæ, on specimens with the prosternum closely applied to the mesosternum. Very faint approaches to a similar structure may be seen in *pictitrons* and *verus*.

**BOTHYNACRUM OCHREONOTATUM, Lea, var.**

A female, from Cairns, evidently belongs to this species, but differs from the type female in having no white post-median patch on the elytra, the same being replaced by conspicuous ochreous spots, similar to the others on the upper-surface.

**PEZICHUS DECIPIENS, n. sp.**

♂. Black, antennæ and tarsi more or less reddish. Moderately, but somewhat irregularly, clothed with rusty-brown scales, in places compacted into feeble fascicles; elytra with several small, transverse spots of white scales.

*Head* small; with dense and rather shallow punctures; a narrow impression behind each eye, and with a feeble medio-frontal ridge. *Rostrum* long, thin, and rather lightly curved, sides slightly dilated to base; apex with small and rather dense punctures, becoming larger towards and rather coarse at base. *Antennæ* thin; scape inserted about one-fourth from apex of rostrum, about as long as funicle and club combined; second joint of funicle slightly longer than first. *Prothorax* slightly longer than wide, sides strongly rounded; with large round granules, or small tubercles; with a very conspicuous carina, on apical three-fourths. *Scutellum* round and distinct. *Elytra* much wider than prothorax, parallel-sided to beyond the middle; with rows of large and rather distant punctures, becoming very small posteriorly; third and fifth interstices somewhat elevated, except posteriorly. Apical segment of *abdomen* widely excavated and notched at tip. *Legs* long; femora moderately dentate, hind pair passing tip of elytra. Length, 12-13½ mm.

♀. Differs in having the apical segment of abdomen evenly rounded at apex, and not excavated in middle.

*Hab.*—Queensland: Cairns district (F. P. Dodd and A. M. Lea). Type, I. 1539.

There are five specimens of this species before me, and as three have the apical segment of abdomen with a large

impression, and the tip notched, they are evidently males, as the other two, evidently females, have the apical segment different. It appears to be very close to *binotatus*, but in that species the sexual differences of the rostrum, antennæ, and legs are very marked. In the present species the only distinct ones are in the abdomen. The rostrum is perhaps a trifle shorter in the male than in the female, but its punctures, and the insertion of antennæ, are practically identical. The female may be distinguished from the female of *binotatus* by the prothorax being covered all over with large granules or small tubercles. On *binotatus* the prothorax is entirely without granules for a considerable space along each side of middle. This species also has the third interstice gently and regularly elevated from near the base to beyond the middle. On that species the third is elevated into a small but distinct tubercle near the base, then depressed, and about the middle gently undulated, or elevated into feeble tubercles. On the prothorax there is a small, elongated (but easily abraded) fascicle on each side of middle; in the middle itself there is an obscure whitish spot. On the elytra there are rather numerous small fascicles on the third and fifth interstices, and sometimes on others. The narrow white spots are on the third about middle, on the fifth near it, on the seventh beyond middle, and three or four on the ninth; but they are sometimes obscured, and are easily abraded.

#### EPISODIOCIS INCONSTANS, n. sp.

♂. Blackish, antennæ and tarsi reddish. Moderately clothed with rusty-brown or ochreous-brown scales, obscurely variegated with sooty ones; a few stout whitish scales on apical portion of elytra.

*Head* with dense partially-concealed punctures. Rostrum rather long, thin, and parallel-sided; with dense punctures, moderately large and distinct in front of antennæ, larger and partially concealed behind same. Scape inserted about two-fifths from apex of rostrum. *Prothorax* rather small, moderately transverse, sides strongly rounded, apex more than half the width of middle; with very dense partially-concealed punctures. *Elytra* much wider than prothorax, base lightly trisinate, sides parallel to slightly beyond the middle; with rows of large, more or less oblong punctures, in places partly concealed, and becoming smaller posteriorly; interstices with dense punctures; third with a small subfasciculate tubercle near base, and another in middle, fifth with two in similar positions, and another fairly close to apex. *Under-surface* with dense, partially-concealed punctures. With a wide shallow depression, common to metasternum and to basal

segment of abdomen. *Femora* stout, strongly dentate, hind pair not extending to tip of abdomen. Length, 5-6 mm.

♀. Differs in having the rostrum longer and thinner, punctures concealed only about base; scape inserted somewhat nearer the middle of rostrum, and basal segment of abdomen somewhat convex in middle.

*Hab* —New South Wales: Illawarra (H. J. Carter and H. W. Brown); Wollongong (A. M. Lea); Queensland: Mount Tambourine and Cairns (Lea). Type, I 1546.

Rather close to *microderes*, but smaller, less densely clothed, and with more acute femoral teeth. The elytral tubercles are rather small, but being clothed with darker scales than on the surrounding parts they are fairly distinct. On the type male there is a small spot of white scales on the third interstice of each elytron beyond the second tubercle, but four other specimens are without such spots. The specimen from Cairns (a female) has sooty scales forming several obscure transverse fasciæ on elytra, the subbasal and median tubercles on the fifth interstice are very feeble, and there is no subapical one

PROTOPALUS HIRTICORNIS, n. sp.

♂. Black. Moderately clothed with ochreous and stramineous scales and setæ; elytra with long blackish hairs on suture and close to same about middle; third interstice with a conspicuous pale fascicle near summit of posterior declivity; antennæ with numerous long, blackish hairs, on one side of five apical joints of funicle, and of basal joint of club.

*Head* strongly convex; with sparse, normally-concealed punctures, a very feeble median ridge between eyes. Rostrum long, inflated about base and again at apex; with coarse, irregular, partially-concealed punctures, but in front with smaller and clearly-defined ones, and with a narrow, impressed line. Antennæ long and thin, inserted almost at tip of rostrum; scape passing eyes a short distance, almost as long as funicle and club combined; funicle with two basal joints very long, distinctly longer than the five apical joints and club combined, first about once and one-half the length of second; club with oblique sutures. *Prothorax* strongly convex, subconical, lightly transverse, with large round granules or small tubercles, regularly disposed, with a strong but not continuous median carina. *Elytra* strongly convex, about one-fourth wider than prothorax, widest across shoulders, thence with oblique sides to near apex; with rows of large, round punctures, becoming small posteriorly; suture distinctly raised in middle and with numerous short

transverse ridges, elsewhere with sparser and more feeble ones. *Mesosternal receptacle* slightly cavernous, walls thin. *Legs* long and thin; front coxæ with a small tubercle; femora lightly dentate, hind ones passing apex of elytra. Length,  $11\frac{1}{2}$ - $15\frac{1}{2}$  mm.

♀. Differs in being more robust, the elytra less wedge-shaped. Rostrum shorter, with smaller punctures, sparser clothing, and without an impressed line at apex. Antennæ much shorter, scape not passing eyes, first joint of funicle slightly shorter than second, the five apical joints and base of club without special hairs. Basal segment of abdomen more convex. Legs much shorter, and hind femora just passing apex of elytra.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1464.

In general appearance much like *schonherri* variety *antennarius*, but mesosternal receptacle slightly cavernous and shoulders narrower. The antennæ of the male are very similar, but on *schonherri*, and on its variety, the long hairs are confined to the funicle, but on this species there are some on the basal joint of club as well (on some small ones, however, the long hairs are very sparse on the club). The whitish spot on the sutural ridge is also not present on this species. *Cristatus* has wider elytra, without pale fascicles, and antennæ very different. *Tectus* is smaller, with rostrum of female (the only sex at present known) much shorter, and clothing very different. The antennæ shoulders and clothing are very different to those of *dromedarius*. All the specimens (sixteen) under examination were taken at night at Malanda on an old stump.

#### CRATOMEROCIS, n. g.

*Head* rather small. Eyes rather large, facets rather coarse. Rostrum long, thin, and curved. Antennæ thin; scape about the length of funicle; two basal joints of funicle elongate; club elliptic ovate. *Prothorax* transverse, base bisinuate. *Scutellum* small. *Elytra* subcordate, base trisinuate. *Pectoral canal* deep, terminated between middle coxæ. *Mesosternal receptacle* U-shaped; slightly cavernous. *Metasternum* rather short; episterna distinct. *Abdomen* wide, intercoxal process wide, all sutures free, two basal segments large. *Legs* rather long; femora stout, dentate; tibiæ compressed, hind pair strongly falcate; tarsi thin, third joint moderately wide and deeply bilobed. Convex, squamose, fasciculate, winged.

Close to *Onidistus*, but the hind tibiæ conspicuously falcate and forehead not quadrisinuate. The receptacle is slightly cavernous, in which it agrees with *O. araneus* and

*subtorricatus*, but in *O. nodipennis* it is decidedly open. From *Paleticus* it is distinguished by the hind tibiae and free abdominal sutures. The only known species is very conspicuous on account of its spots of flavous scales. The hind femora are ridged on the lower-surface, the ridge itself being angulated in two places, somewhat lightly at the basal third, and strongly at the apical third; in consequence the hind femora from some directions appear conspicuously bidentate, from others, however, they appear to be unidentate only.

CRATOMEROCIS FLAVONOTATUS, n. sp.

Black; antennæ (club excepted) and tarsi reddish. Densely clothed with dark chocolate-brown or blackish scales, closely applied to derm, but interspersed with stout suberect ones, in places compacted into feeble fascicles. Prothorax with a fairly large, round, medio-basal spot of flavous scales, each side near apex (but invisible from above) with a smaller spot, each elytron with two small spots: one on the third interstice, the other on the eighth.

*Head* with dense, concealed punctures. Rostrum slightly longer than prothorax, parallel-sided except at base; basal portion with punctures in rows separated by distinct ridges, elsewhere with sparse and minute punctures. Scape inserted about two-fifths from apex of rostrum. *Prothorax* moderately transverse, sides strongly rounded, apex about half the width of base; with normally-concealed punctures. *Elytra* about one-third wider than prothorax, not twice as long as wide, base strongly trisinate, sides feebly rounded to beyond the middle, thence rapidly diminishing in width to apex, which is obtusely notched; with rows of large, partially-concealed punctures; third and fifth interstices each with two feeble elevations, supporting fascicles; a few small granules (sometimes concealed) on suture. Hind femora with a very strong tooth, and a dentiform process between tooth and base, the other femora acutely, but not very strongly, dentate. Length, 5-6 mm.

*Hab.*—Queensland: Kuranda (G. E. Bryant, F. P. Dodd, and H. H. D. Griffith); Mossman River (Macleay Museum). Type, I. 1497.

A very distinct species. With the head in position it appears to have the punctures entirely concealed by scales, but when removed from the body the base is seen to be covered with dense, clearly-defined punctures on a space defined from the densely-clothed part by an evenly-curved (not quadrisinuate) line. The sexes are not very sharply defined. The male has a slightly stouter rostrum than the female, with the



basal punctures more advanced towards the middle, and the antennæ inserted a trifle closer to the apex of rostrum.

RHÆBOCNEMOCIS, n.g.

*Head* of moderate size and evenly convex. Eyes large, coarsely faceted. Rostrum long, thin, and curved. Antennæ thin: scape inserted rather close to apex of rostrum, and considerably passing same, two basal joints of funicle moderately long: club elongate-elliptic, sutures oblique. *Prothorax* transverse, sides rounded, base almost truncate. *Scutellum* distinct. *Elytra* much wider than prothorax, sides parallel to beyond the middle. *Pectoral canal* narrow, deep, terminated between middle coxæ. Mesosternal receptacle U-shaped, walls thin: slightly cavernous. Metasternum slightly shorter than the following segment. *Abdomen* large, suture between two basal segments indistinct in middle, third and fourth comparatively large, their combined length distinctly more than that of second or fifth. *Legs* long; femora stout, strongly dentate, hind pair passing apex of elytra: tibiæ compressed, falcate: tarsi thin, first and fourth joints elongate. Squamose, fasciculate, winged.

Some of the characters, especially of the under-surface, appear to denote an approach to *Pezichus*, but the legs are very different and the elytra are without the small fascicles of whitish scales<sup>(10)</sup> just beyond the middle that are almost invariably present in the allies of *Protopalus*. It appears to be allied to *Onidustus*, and may be placed after *Cratomerocis*, from which it differs in its unidentate hind femora, abdominal sutures, and base of head.

RHÆBOCNEMOCIS POSTERUS, n. sp.

Black: rostrum, antennæ, and tarsi more or less reddish. Rather densely clothed with brownish scales, variegated in places with paler and darker ones: with fairly numerous, suberect scales interspersed.

*Head* with punctures concealed. Eyes separated less than width at base of rostrum. Rostrum slightly longer than prothorax, somewhat dilated towards but notched on each side of base; basal third with rather coarse, concealed punctures, elsewhere with sparse and small ones. Scape inserted about one-fifth from apex of rostrum. *Prothorax* moderately transverse, sides strongly rounded, apex more than half the width of middle; punctures dense, but normally concealed. *Elytra* subcordate, base distinctly trisinate; with rows of rather large,

(10) There are several spots of whitish scales on the elytra, but not elevated into fascicles.

partially-concealed punctures; third interstice feebly elevated in parts. *Under-surface* with fairly large, partially-concealed punctures. Length, 5 mm.

♀. Differs in having the rostrum rather more curved. punctures concealed only near extreme base; antennæ somewhat shorter, and not inserted so close to apex, and legs somewhat shorter.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1496.

The posterior declivity is rather conspicuously variegated with spots or stripes of black and almost flavous scales; on one specimen the balance of the scales there are of a whitish-grey, on the other they are brownish. On other parts of the elytra there are a few feeble greyish spots. On the prothorax the clothing is almost uniformly pale-brownish, but along the middle it forms a median line, apparently concealing a very feeble carina. On the sterna the scales are more or less ochreous. The teeth of the hind femora are very large, more than thrice the size of the others.

#### PSEUDONIDISTUS CALVICEPS, n. sp.

Black: antennæ and tarsi reddish, rostrum and parts of the legs diluted with red. Upper-surface densely clothed with rusty-brown or muddy-brown scales, interspersed with stout erect ones, that in places are compacted into fascicles.

*Head* densely clothed in front, but elsewhere bald and shining; trisinate, median sinus widest, the others immediately behind eyes. Rostrum moderately long, basal third carinated along middle, and with coarse concealed punctures, elsewhere shining and with minute punctures. Antennæ thin, inserted about one-third from apex of rostrum. *Prothorax* moderately transverse, with four obtuse tubercles crowned by fascicles across middle: with large, irregularly distributed, and normally-concealed punctures. *Elytra* briefly subcordate, at base no wider than prothorax, but sides from base obliquely dilated, then parallel, and then arcuate to apex; with irregular rows of very large partially-concealed punctures, becoming smaller posteriorly; each shoulder and third and fifth interstices with obtuse, fascicle crowned tubercles. *Meta-sternum* with a curved row of large punctures on each side. Basal segment of *abdomen* also with a curved row on each side, its suture with second marked in the middle by a conspicuous fovea. *Femora* clavate, strongly and acutely dentate; tibiae thin and compressed. Length, 4½ mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea); New South Wales: Tweed River (H. J. Carter). Type, I. 1522.

In size and general appearance very close to *cordatus*, but forehead with median sinus wider and shallower, no punctures at base of second abdominal segment, and elytra with a tubercle on each shoulder. The abdominal fovea is much as on *cordatus*, although it was not mentioned in the description of that species. The under-surface of both specimens is almost glabrous, but this may be due to abrasion. The rostrum of the specimen from the Tweed River is slightly longer than that of the type.

PALETONIDISTUS FOVEICOLLIS, n. sp.

Black; antennæ (club somewhat darker) and tarsi red. Sparsely and unevenly clothed, but legs densely clothed.

*Head* with forehead obscurely quadrisinuate, but with a distinct median carina. Rostrum moderately long, evenly curved, sides slightly dilated at middle (where antennæ are inserted): on basal fourth with irregular rows of coarse, partially-concealed punctures, elsewhere shining and with small and rather sparse ones. Scape slightly shorter than funicle; two basal joints of funicle subequal in length, but first stouter than second: club elliptic-ovate. *Prothorax* lightly transverse, sides rather strongly rounded, apex more than half the width of base, near base in middle with a deep and moderately large fovea. Elytra distinctly but not much wider at base than prothorax, widest at about middle; with irregular rows of rather small, squamiferous punctures, not in striae except at sides; with a large tubercle on third interstice near base, and a much smaller one in middle, a large one on second interstice about summit of posterior declivity, and a smaller one before middle; base on each side of scutellar region with a small shining tubercle. *Mesosternal receptacle* rather strongly elevated and sloping downwards to base and apex. *Metasternum* with a row of large punctures behind each middle coxa. *Abdomen* with first segment slightly longer than second and third combined, its suture with second deep at sides, and distinct across middle, each side near base with a few large punctures; apical segment rather densely punctured. *Legs* long; femora rather strongly dentate, hind ones just passing apex of elytra. Length,  $8\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1463.

Differs from *trisinuatus* in its sparse punctures, conspicuous medio-basal fovea of prothorax, number and disposition of tubercles, mesosternal receptacle more conspicuously elevated, distinct suture between two basal segments of abdomen, hind femora passing elytra, etc. *Illidgea*, to which at first glance it appears to belong, has coarsely-faceted eyes, edentate femora,

etc. To the naked eye the upper-surface has a dingy-greyish appearance. On the elytra the posterior declivity has denser and paler scales than elsewhere, but the tubercles are crowned with sooty scales. On the prothorax there are six fascicles, of which the outer median ones are smaller and paler than the others. There are no distinct punctures on the prothorax, although most of its derm is exposed. The four large elytral tubercles are of even size, the smaller ones between them are crowned with scales, rendering them fairly conspicuous; there are also a few tubercular swellings on the sides.

*POROPTERUS CONSTRICTIFRONS*, n. sp.

Black; antennæ, tibial hooks, and claws more or less red. Irregularly clothed with muddy-brown and ashen scales, a few almost black; each elytral puncture with one wide scale.

*Head* with minute punctures and very finely shagreened; ocular fovea small but clearly defined. Rostrum rather long and thin, slightly dilated to apex, with numerous and usually clearly-defined punctures. Antennæ inserted about two-fifths from apex of rostrum, second joint of funicle distinctly longer than first. *Prothorax* about as long as wide, sides strongly rounded, apex produced but not bilobed; with four rather large round tubercles across middle, the outer ones smaller and nearer the apex than the inner ones, towards base with some smaller subobsolete ones; subapical constriction very deep and continuous across summit. *Elytra* elongate-ovate, widest at about basal third; with rows of large punctures becoming smaller posteriorly; third interstice with two fairly large tubercles, one at about basal fourth, the other crowning the posterior declivity, which is rather long; with several feeble tubercular swellings elsewhere; with some shining squamiferous granules on and near suture and on tubercles. *Mesosternal receptacle* U-shaped, walls thin but rather stouter at base than elsewhere. *Abdomen* with straight, deep sutures to three middle segments. *Legs* long and thin; posterior femora passing apex of elytra; third tarsal joint wide and deeply bilobed. Length, 11 mm.

*Hab.* — North Queensland (Blackburn's collection). Type, I. 1296, in South Australian Museum.

The subapical constriction is deep and continued from side to side, causing the prothorax to appear as if a wire had been bound across it when soft. This character will readily distinguish it from *rhyticephalus*. In many species of the genus the constriction is deep at the sides, but not continuous across the summit. The type appears to be somewhat abraded, and is probably a female.

## POROPTERUS PARVIDENS, n sp.

♂. Black; antennæ tibial hooks and claws more or less red. Rather sparsely clothed with large ashen-grey scales, usually becoming much darker on tubercles; under-surface and legs with ashen scales irregularly mixed with sooty ones, the legs with stout sooty setæ as well; apical half of head and rostrum to antennæ rather densely clothed

*Head* with minute punctures, and very finely shagreened; ocular fovea rather large but partly concealed. Rostrum moderately long, sides very feebly incurved to middle, obsoletely carinated along middle to antennæ, apical third with fairly dense but rather shallow punctures. Antennæ inserted about two-fifths from apex of rostrum; scape rather short; first joint of funicle stouter, but slightly shorter than second. *Prothorax* slightly longer than wide, with two large median tubercles; subapical constriction interrupted in middle, deep and irregular on sides; elsewhere deeply and irregularly grooved. *Scutellum* small. *Elytra* suddenly, but not much, wider than prothorax, subparallel-sided to near apex; with large distant punctures, larger on sides than elsewhere; with four large tubercles—two at basal fourth and two crowning the posterior declivity; between these four smaller tubercles placed transversely, the inner ones much larger than the outer ones, but considerably smaller than the four large ones; shoulders tuberculiform. *Mesosternal receptacle* rather large and elevated at base, emargination with thin widely-U-shaped walls, sloping down to front coxæ. *Abdomen* with basal segment as long as three following combined, these with straight sutures, those of the third and fourth deep. *Legs* long and thin; femora subclavate, very feebly dentate, posterior passing elytra; third tarsal joint rather wide and deeply bilobed. Length,  $8\frac{1}{2}$ -9 mm.

♀. Differs in having somewhat shorter legs (but the hind femora pass the elytra), rostrum longer, thinner, clothed only near base and with smaller but more clearly-defined punctures, and antennæ inserted not quite so close to apex of rostrum.

*Hab.*—Queensland: Kuranda (G. E. Bryant): Cairns (H. W. Cox and A. M. Lea). Type, I. 1297, in South Australian Museum.

In some respects an aberrant species and approaching *Illidgea*, but head not as in that genus, eyes larger and with smaller facets, abdomen with second segment distinctly longer than third, etc. It is a narrow, deep species, with large tubercles, some of which are sometimes obscurely diluted with red. The teeth of the four hind femora are so small that they could be readily overlooked; those of the others are

larger, but still small and more or less concealed by the clothing

*POROPTERUS ORNATICOLLIS*, n. sp

Black. antennæ and tarsi more or less red. Sparsely and irregularly clothed with scales varying from ashen to sooty, tubercles with black fascicles, but on prothorax varied with ochreous and whitish scales; legs rather densely clothed; a small patch of pale scales near each eye.

*Head* with fairly large but sparse and shallow punctures. Eyes with coarser facets than usual. Rostrum moderately long, somewhat dilated to apex; with numerous clearly-defined punctures. Antennæ rather thin, scape inserted two-fifths from apex to rostrum; second joint of funicle slightly longer than first. *Prothorax* longer than wide, sides strongly rounded; apex produced and slightly concave, with a conspicuous fringe about the concave portion, subapical constriction deep and abruptly terminated at fringe; with a median carina, feeble near apex, but appearing at base as a scutellar lobe, with four fasciculated tubercles across middle, and two slightly behind the median ones, with large, round, irregularly-distributed punctures. *Elytra* narrow and deep, not much wider than widest part of prothorax; sides with large and usually somewhat angular, distant punctures or foveæ, along middle and on posterior declivity much smaller; third interstice with three distinct but rather small tubercles, the first at about basal fifth, the third near summit of posterior declivity, the second halfway between the others; fifth with three somewhat smaller tubercles, each placed slightly behind its fellow on the third; some small shining squamiferous tubercles on suture and on tubercles. *Mesosternal receptacle* shorter, but otherwise as in preceding species. *Abdomen* with first and fifth segments each about as long as the others combined, suture between first and second deep at sides, but distinct across middle, the other sutures deep and straight. *Legs* long and thin; posterior femora passing apex of elytra; third tarsal joint wide and deeply bilobed. Length,  $7\frac{1}{2}$ -8 mm.

*Hab.*—Victoria: Bau Bau (Blackburn's collection): Queensland: Little Mulgrave River (H. Hacker). Type, I. 1293, in South Australian Museum.

On the prothorax there is a distinct irregular patch of pale scales, commencing at the median fascicles and continued along the carina to the base; there are also two small medio-apical whitish fascicles, feebly indicated from behind, but very distinct from in front. Many of the elytral punctures have a transverse impression from each side. I cannot satisfy

myself as to whether one specimen has a minute scutellum or not, but the other is certainly without one. Both specimens appear to be feminine.

*POROPTERUS CONVEXUS*, n. sp.

Black; antennæ of a dingy-red. Sparsely clothed with thin scales varying from muddy-brown to sooty; but legs, especially the tibiæ, rather densely clothed.

*Head* with fairly large but sparse and shallow punctures in front, towards base with numerous small punctures and finely shagreened. Ocular fovea rather large and transverse. Eyes coarsely faceted. Rostrum moderately long, sides slightly swollen between base and antennæ, and feebly dilated in front of same to apex; with dense, clearly-defined punctures, coarser behind than in front of antennæ, but with an inpunctate space along middle between same. Antennæ inserted about two-fifths from apex of rostrum; scape rather short; first joint of funicle stouter but scarcely, if at all, longer than second. *Prothorax* slightly longer than wide, sides rounded in middle, apex feebly produced and rounded; subapical constriction deep, regular and continuous; with four very obtuse tubercles across middle; carina represented only by a feeble scutellar lobe; sides with very few punctures, but with a deep groove at base. *Scutellum* minute. *Elytra* narrow, strongly convex, much deeper than wide; non-tuberculate; sides obscurely striated and with comparatively small and distant punctures, elsewhere with very small punctures, but in places transversely impressed. *Mesosternal receptacle* with basal portion rather large and convex, emargination semicircular. *Abdomen* with first segment as long as three following combined, and somewhat longer than fifth, its suture with second distinct at sides, but deeper and wider across middle, second somewhat shorter than third and fourth combined. *Legs* long and thin; hind femora passing apex of elytra: third tarsal joint moderately wide and deeply bilobed. Length,  $8\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, 1. 1299, in South Australian Museum.

A narrow, deep species, with non-tuberculate elytra; its coarsely-faceted eyes are rather aberrant for the genus. Of the described species it is perhaps nearest to *longipes*, but that species has wider and differently sculptured elytra and finely faceted eyes. The elytra when viewed from the side appear to be strongly rounded from the base to the basal fourth, and then to sweep round evenly to the apex, so that it is difficult to decide as to where the posterior declivity commences. The type is probably a male.

## POROPTERUS RUBETER, Er.

Var. A Two specimens from Victoria (Victorian Alps, Blackburn's collection; and Bright, H. W. Davey) differ from Tasmanian specimens of this species in being smaller ( $5\frac{1}{2}$ - $6\frac{1}{2}$  mm.), and with a large and conspicuous pale triangle on each elytron; the triangle commences on each shoulder, extends to the second interstice near the middle, and then has a rounded outline to the side. On the rest of the upper-surface, however, the clothing is less variegated and more uniformly distributed than on Tasmanian specimens, and the fasciculate tubercles on the elytra are less conspicuous.

## OPHRYTHYREOCIS, n. g.

*Head* small, forehead somewhat sinuous. Eyes small, prominent, distant, coarsely faceted. Rostrum moderately long and not very thin, lightly curved. Antennæ moderately long, scape inserted about one-third from apex of rostrum; two basal joints of funicle elongate; club ovate. *Prothorax* transverse, sides rounded, apex produced. *Scutellum* round and conspicuously elevated. *Elytra* at base not much wider than prothorax, and about twice as long. *Pectoral canal* deep and wide, terminated between or near middle coxæ. Mesosternal receptacle of variable shape, cavernous. Metasternum short; episterna indistinct. *Abdomen* with two basal segments large, third and fourth usually depressed below level of second and fifth. *Legs* short; femora indistinctly grooved and very feebly dentate; tarsi with third joint rather wide and deeply bilobed.

This genus is proposed for three weevils having the general appearance as of minute members of the *lithodermus* group of *Poropterus*, but distinguished from *Poropterus* by the femora. But the genus is distinct on account of the conspicuously elevated scutellum, a character almost unique in the Australian *Cryptorhynchides*. The scutellum also is not clothed with scales, but has a greyish, waxy-looking coating. With them, but as somewhat aberrant on account of its longer legs, has been associated *Poropterus valgus*, which has a similar scutellum. Its front femora are certainly neither grooved nor dentate, nor are the four hind ones distinctly grooved, but as on a close examination very feeble grooves are traceable, and extremely small teeth<sup>(11)</sup> may be seen amongst the scales, it appears desirable to transfer it from *Poropterus*, in which it would certainly not have been placed had I previously observed the femoral teeth.

(11) The teeth are visible with difficulty and from one direction only.



Legs long, front tibiæ twisted at apex	<i>valgus</i>
Legs short, front tibiæ not twisted.	
Third and fourth segments of abdomen scarcely depressed below level of fifth	<i>microps</i>
Third and fourth distinctly so de- pressed.	
Eyes very prominent	<i>exophthalmus</i>
Eyes moderately prominent	<i>ferrugineus</i>

OPHRYTHYREOCIS EXOPHTHALMUS, n. sp.

Black: antennæ and tarsi red. Densely clothed with rusty-brown scales, interspersed with numerous stout, sub-erect ones, in places forming fascicles.

*Head* partly bald, and with the forehead lightly sinuous. Eyes latero-frontal, small and very prominent. Rostrum rather wide, sides lightly incurved to middle; behind antennæ with numerous erect scales, evidently concealing coarse punctures, in front with dense punctures. *Prothorax* decidedly transverse, moderately convex, apex about half the width of base; with dense, partially-concealed punctures. *Elytra* subcordate, sides rather strongly rounded, base truncate; with rows of large, partially-concealed punctures. Third and fourth segments of *abdomen* distinctly depressed below second and fifth. *Femora* stout, lightly but (from some directions) distinctly dentate. Length, 3 mm.

*Hab.*—Queensland: Mount Tambourine, sieved from rotting leaves (A. M. Lea). Type, I. 1517.

On the prothorax six very feeble fascicles may be traced. On the elytra there are very feeble ones on the second and fourth interstices. Some of the erect scales, both isolated and in the fascicles, are sooty. So far as it is possible to judge, on account of the clothing, the punctures in the elytral rows are quite as large near apex as elsewhere. The type is almost certainly a male.

OPHRYTHYREOCIS VALGUS, Lea.

A specimen from Victoria (Blackburn's collection) possibly belongs to this species: if it is, it is a female, and differs from the type in being smaller (3½ mm.), with somewhat less prominent eyes and front tibiæ not distorted at apex. The rostrum is thinner, with smaller but not concealed punctures, and clothed only at base. The scutellum is as conspicuously elevated as is that of the type, but the clothing or exudation on it is of a redder tone.

PSEUDOPOROPTERUS IRRASUS, n. sp.

Black; antennæ and tarsi reddish. Clothed with dingy-scales; with rather thin suberect ones scattered about.

*Head* with very large punctures, partially concealed towards base. *Rostrum* stout, slightly dilated in front of antennæ, parallel-sided behind same; with four rows of very large punctures, becoming smaller and irregular in front. *Scape* moderately stout, inserted two-fifths from apex of rostrum, shorter than funicle. *Prothorax* moderately transverse, sides strongly rounded, base truncate and more than twice the width of apex, with very large, deep punctures, crowded together; with a somewhat sinuous median carina. *Elytra* not much wider than prothorax, shoulders very feebly produced, sides rounded, posterior declivity strongly rounded; with rows of very large, but in places partially-concealed punctures; interstices each with a row of small, shining granules. *Abdomen* with very large punctures on two basal segments, fifth with crowded smaller ones, third and fourth conspicuously depressed below level of others. *Femora* moderately long, strongly grooved, edentate, hind pair extending to tip of elytra. Length,  $3\frac{3}{4}$ -5 mm.

*Hab.*—Queensland: Bluff (A. M. Lea). Type, I. 1889.

In appearance fairly close to *Acalles doriae* <sup>(12)</sup> but wider, with larger punctures and different clothing. On the upper-surface there are numerous rather dingy light-brown scales scattered about in some spots (some paler than others), but quite regularly clothing the suture: and there are numerous, but very indistinct, sooty-brown scales. On slight abrasion, however, the spotted appearance is lost. On the under-surface and legs the scales are mostly pale and rather thin, much like the suberect ones on the upper-surface. In a direct line the elytra are about once and one-half the length of prothorax, but along the curve they are fully twice as long. There are a few indistinct granules on the prothorax, mostly on the flanks.

Five specimens in the British Museum (from the Adelaide River) appear to represent a variety. They differ in having the pale-brown scales on the upper-surface almost confined to the apical half of the suture, elsewhere the scales are of a more or less sooty-brown, but with rather distinct whitish spots scattered about; of these there are from one to three on the second interstice, one or two on the third, and one on the fifth. One of them has the clothing on the apical portion of the suture whitish, and only three punctures (but those unusually large) on the second abdominal segment.

#### EURYCIS, n. g.

*Head* wide, partially-concealed from above, base evenly convex. *Eyes* small, widely separated, coarsely faceted.

(12) To be referred to *Pseudopropertus*.

Rostrum wide, feebly curved; scrobes narrow and deep in front, but wide and shallow behind. Antennæ moderately thin, inserted nearer apex than base of rostrum; scape shorter than funicle; two basal joints of funicle elongate; club elliptic-ovate. *Prothorax* strongly transverse, sides strongly rounded, apex produced. *Scutellum* absent. *Elytra* scarcely longer than wide, sides strongly rounded, base with produced tubercles. *Pectoral canal* deep and wide, terminated just behind front coxæ. Mesosternal receptacle rather large, elevated in front, emargination strongly transverse, cavernous. Metasternum very short; episterna narrow. *Abdomen* rather large, first segment almost twice the length of second, its suture with that segment distinct only at sides, third and fourth very short. *Legs* short and stout; femora edentate, shallowly grooved; tarsi linear, spongiose on lower surface. Briefly ovate, tuberculate, densely squamose, apterous.

The tarsi might fairly be regarded as linear, as the third joint is almost the exact width of the second, and this would associate the genus with *Scolyphrus*, *Agenopus*, and a section of *Poropterus* and of *Euryporopterus*. From *Scolyphrus* it is distinguished by the very different base of elytra; from *Poropterus* by the grooved femora, and from *Euryporopterus* by the convex base of head. The generic diagnosis of *Agenopus* is simply a brief comparison with *Poropterus* and *Mormosintes*, but the description of *A. agricola* indicates a very different looking species to the present one.

#### EURYCIS MULTINODOSUS, n. sp.

Black; antennæ of a dingy-red. Densely clothed with muddy-brown scales, in places appearing as fascicles owing to numerous small tubercles.

*Head* with dense punctures. Rostrum scarcely as long as prothorax, but little more than twice as long as greatest width, sides distinctly incurved to middle; with four rows of large, round punctures, becoming smaller and crowded at apex. *Prothorax* almost twice as wide as long, sides strongly rounded, apex about one-fourth the width of middle; with some small tubercular swellings, and with crowded, partially-concealed punctures. *Elytra* not one-fourth longer than wide, sides nowhere parallel, and widest at about basal fourth; with irregular rows of large, more or less concealed punctures; interstices with numerous small tubercles. *Under-surface* with large, round, deep punctures. Length,  $6\frac{1}{2}$ - $7\frac{1}{2}$  mm.

*Hab.*—Australia (old collection). Type, I. 1516.

The specimens were simply labelled 27/1/79 and 19/5/79, but are probably from South Australia. On one of them the scales are not at all variegated, but on the other there are

remnants of a transverse fascia at summit of posterior declivity. On the prothorax thirteen small tubercles (some of which are very feeble) may be counted; of these there are two near each margin, and eight are roughly arranged in the forms of two crosses, the basal piece of each of these being on the base halfway between the middle (where the thirteenth one is placed) and the side. On the elytra the tubercles are numerous, the most distinct ones are six at the base projecting forwards; across the summit of the posterior declivity there is a row of six fairly large ones, elsewhere but few are conspicuous

PALETICUS LUTULENTUS, n. sp

♂. Black; antennæ and tarsi reddish. Densely clothed with muddy-brown scales, in places variegated with black ones. With numerous stout and usually rather pale scales scattered about, and in places compacted into feeble fascicles

*Head* with concealed punctures. Ocular fovea rather wide. Rostrum long, sides lightly incurved to middle; basal half with concealed punctures, elsewhere shining and with small, clearly-defined ones. Scape inserted two-fifths from apex of rostrum, and slightly shorter than funicle; second joint of funicle longer than first. *Prothorax* moderately transverse, sides rounded and narrowed from base to apex. apex half the width of base; punctures concealed. *Scutellum* minute. *Elytra* much wider than prothorax, base strongly trisinate, sides almost parallel to beyond the middle; with rows of large, round, and rather distant punctures, becoming small posteriorly, third interstice with a distinct tubercle at basal third, and another about middle; each shoulder tuberculate; with some small sutural granules. *Abdomen* with a deep curved impression on each side of base, terminating near middle in a fovea. *Legs* long; femora stout, strongly and acutely dentate, hind ones passing apex of elytra. Length, 8-9 mm.

♀. Differs in having the rostrum longer and thinner, especially in front of antennæ, coarse punctures less advanced towards middle; scape inserted slightly nearer the middle of rostrum, and two basal segments of abdomen gently convex instead of flat.

*Hab.*—Queensland: Cairns district (E. Allen and A. M. Lea) Type, I. 1523.

The suture between the two basal segments of abdomen is deep at the sides and distinct, although not deeply impressed, across the middle, but the segments are certainly not soldered together as in other species of the genus. In some respects it is allied to *frontalis* and *cordipennis*. There are four very feeble fascicles across the middle of the prothorax,

but at the apex the scales could not be regarded as forming fascicles. On the elytra they feebly crown the tubercles. On the upper-surface there are irregular patches of small sooty scales, having the appearance at the edges of the patches of being overlaid by the muddy-brown ones.

PALETICUS INFLATUS, n. sp.

♂. Black: antennæ and tarsi more or less reddish.

*Head* with concealed punctures. Ocular fovea rather small. Rostrum about the length of prothorax, not very thin, almost parallel-sided; basal three-fifths with coarse concealed punctures, elsewhere shining and with rather small clearly-defined ones. Scape inserted two-fifths from apex of rostrum, the length of five following joints combined; second joint of funicle longer than first. *Prothorax* moderately transverse, sides gently rounded, apex more than half the width of base. *Elytra* short, subcordate; base, except for a slight median sinus, truncate, and scarcely wider than prothorax, but sides dilated and strongly rounded: with rows of rather large punctures, becoming smaller posteriorly, the first not continuous to base: third and fifth interstices distinctly wider than the others, and feebly elevated; with a few feeble sutural granules. Basal segment of *abdomen* concave along middle, with a deep curved impression on each side of base. *Legs* as in preceding species. Length, 7 mm.

♀. Differs in having the rostrum somewhat longer and thinner, coarse punctures less advanced towards middle, scape inserted slightly nearer middle of rostrum, elytra narrower towards apex, and basal segment of abdomen convex across middle.

*Hab.*—Queensland: Cairns district (A. M. Lea); Mount Bellenden-Ker (Solari Bros.). Type, I. 1524.

The generic position of this species is somewhat doubtful, as the shoulders do not clasp the prothorax, still it does not appear advisable to propose a new genus on this character alone. The conspicuously dentate and non-grooved femora distinguish it from *Platyporopterus*. The clothing is not alike on the two typical specimens. On the male there are minute scales varying from grey to sooty, lightly scattered about, but becoming dense on apical portion of elytra and on the legs; it also has stout, sooty, suberect scales, not forming fascicles, but fairly numerous on prothorax, and on the elytra forming lines, more noticeable on the odd than on the even interstices. The female was probably more densely clothed, but has evidently been considerably abraded, as there are irregular patches of rather dense scales on the upper-surface; the dark, stout scales of the male are also replaced by muddy-brown ones. The female also has the third and fifth interstices feebly tuberculate

at the basal third; in the male the swellings there are scarcely traceable. The elytra, in addition to having strongly rounded sides, slope upwards from the base, so that when viewed from the sides they appear to be conspicuously elevated above the prothorax. In consequence of the median impression the basal segment of the male abdomen appears to be bilobed.

EURYPOROPTERUS CRYPTODERMUS, n. sp.

♂. Black; antennæ and tarsi red. Densely clothed with muddy-brown scales; interspersed with numerous stout, sub-erect ones, in places compacted into fascicles.

*Head* with very dense, concealed punctures. Rostrum rather long and thin, sides lightly incurved to middle; with dense punctures throughout, but more or less concealed behind antennæ. Antennæ thin; scape inserted about one-third from apex of rostrum. *Prothorax* strongly transverse, base strongly bisinuate, sides strongly rounded, surface uneven; with four feeble fascicles across middle and two at apex; with rather large, irregular, concealed punctures; and with a thin, concealed median carina. *Scutellum* not traceable. *Elytra* short, base strongly trisinuate, with shoulders strongly produced, sides gently rounded to beyond the middle; with rows of large, rounded, more or less concealed punctures; third and fifth interstices each with a distinct fascicle at summit of posterior declivity, some feeble ones elsewhere. Punctures of *under-surface* concealed. Two basal segments of abdomen large, first as long as three following combined; a deep groove on each side of base, flattened or feebly depressed in middle. *Legs* rather short; femora feebly grooved, edentate, hind pair scarcely extending to apical segment. Length, 6-7 mm.

♀. Differs in having the rostrum somewhat thinner, shining, with less of the base concealed, antennæ inserted not quite as close to apex of rostrum, and basal segment of abdomen gently convex.

*Hab.*—South Australia: Adelaide (J. G. O. Tepper and Blackburn's collection); Victoria: Bostock. Type, I. 1779.

Of the species previously referred to the genus the fascicles would associate it with *annulipes* and *tenuifasciatus*: from the latter it is readily distinguished by the edentate femora, but the antennæ are quite as thin as in that species: from the former it is distinguished by the very different base of elytra. The clothing is so dense that the prothoracic punctures are entirely concealed, and even many of the large elytral ones. On the under-surface the sutures between the metasternum and its episterna are concealed. From some directions the second joint of funicle appears to be distinctly longer than the first, but the two are really of almost exactly the same length.

## OMYDAUS PARVICEPS, n. sp.

Black; antennæ and claws of a very dingy-red. Moderately clothed with scales, mostly more or less ochreous on upper-surface, mostly paler (usually whitish) on under-surface and legs.

*Head* small, with dense and coarse punctures. Rostrum long, thin, and moderately curved: basal half with coarse, partially-concealed punctures, elsewhere shining and with small but clearly defined ones. Scape inserted about one-third from apex of rostrum; second joint of funicle longer than first. *Prothorax* scarcely wider than long, sides rather strongly rounded, apex about half the width of middle; with dense, round punctures, larger about middle than on sides; with a narrow median carina. *Elytra* somewhat flattened, distinctly wider than prothorax, base strongly trisinate, sides feebly diminishing in width to beyond the middle; with rows of large, rough, suboblong punctures; interstices with crowded punctures. *Under-surface* with dense punctures. Femora strongly and distinctly dentate; tibiæ compressed, punctures in rows separated by ridges, front pair strongly dentate in middle of lower-surface, and each with a small subapical tooth in addition to the terminal hook. Length, 7-8 mm.

*Hab.*—Queensland: Kuranda (F. P. Dodd and G. E. Bryant). Type, I. 1527.

Allied to *subfasciculatus*, but decidedly narrower, front tibiæ distinctly arched on outer margin, and submedian tooth of lower edge more conspicuous; eyes larger and with finer facets; punctures very different, etc. The rostrum is decidedly longer and thinner than in any previously described species, although very similar to that of the following one. On the upper-surface there are a few sooty scales, but they so closely resemble the derm on which they rest that they can be seen with difficulty. There is a small but conspicuous spot of ochreous-red, or ochreous, scales on the flank of each elytron, half-way between the middle and hind coxæ. On the legs there are numerous rather long setose scales. The base of the head has numerous fine slightly-curved impressions, with small squamiferous punctures set at regular intervals, but they are normally concealed by the prothorax. The typical specimens (four) all have the basal segment of abdomen somewhat concave, so they are presumably males.

## OMYDAUS TIBIALIS, n. sp.

Black; antennæ and tarsi of a dingy-red. Rather sparsely clothed with ochreous-red scales, of a brighter colour on upper- than under-surface.

*Head* rather small: with dense and coarse punctures. Rostrum rather long and thin, lightly curved; basal two-fifths with coarse punctures and feeble ridges, elsewhere shining and with small punctures. Scape inserted one-third from apex of rostrum; second joint of funicle longer than first. *Prothorax* and *elytra* with sculpture as described in preceding species. *Under-surface* with dense and rather coarse punctures. Basal segment of *abdomen* gently convex. *Femora* strongly dentate; *tibiae* strongly compressed, each with a thin outer flange, extending almost its entire length; with rows of punctures, separated by ridges. Length,  $7\frac{1}{4}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1528.

Readily distinguished from all previously described species by the wide and strongly compressed *tibiae*. In general appearance it is like the preceding species, but the front *tibiae* are without a median tooth. On the *elytra* the ochreous-red scales are more noticeable about the summit of the posterior declivity than elsewhere on the upper-surface; before and after same there are a few sooty scales, but they are indistinct, owing to their close resemblance to the derm. On the flank of each *elytron* there is a small conspicuous spot as on the preceding, and on several other, species. The type is probably a female.

#### OMYDAUS SCULPTILIS, n. sp.

Black, antennæ and tarsi obscurely diluted with red. Irregularly clothed with scales, varying from almost white to rusty-brown.

*Head* with some small, clearly-defined punctures; a deep narrow impression behind each eye. Rostrum moderately long, lightly curved, sides gently dilated towards base; about base opaque and with not very large punctures, elsewhere shining and with small ones. Scape inserted about two-fifths from apex of rostrum, very little shorter than funicle; two basal joints of the latter subequal in length. *Prothorax* distinctly transverse, sides strongly rounded, and near apex deeply and narrowly impressed; with some large irregular punctures on sides and some smaller ones about apex, across median two-thirds with two deep and very conspicuous curved impressions, the median one interrupted in middle, the other not interrupted. *Elytra* distinctly wider than *prothorax*, scarcely twice as wide as long, base trisinate, sides subparallel to beyond the middle; with rows of large, distant punctures, becoming smaller towards sides and almost absent posteriorly. *Under-surface* with small and sparse punctures. *Metasternum* with a curved impression across middle. *Abdomen* with a strongly-curved impression towards base of



first segment, second distinctly longer than third, but not as long as third and fourth combined. *Legs* rather long; front femora distinctly dentate, the others edentate; front tibiae with a strong median tooth, and a small subapical one, in addition to the terminal hook. Length,  $11\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I 1529.

The type of this very fine, but somewhat aberrant, species is evidently in perfect condition, and its head has not been detached so that the base could be examined. Most of the derm is nude, but on the prothorax there is a moderately distinct line of pale scales towards each side, and a few scattered about on the sides and apex. On the elytra the suture (except about base) is distinctly clothed with rusty scales, and a few are irregularly scattered about elsewhere, but the paler scales form feeble irregular spots, mostly about the middle. The legs are moderately densely clothed. All the tibiae are finely serrated along their lower edges, but the serrations are obscured by scales; the median tooth of the front pair, however, is very strong. The elytra are not at all striated, except at the sides, although the punctures are seriate in arrangement. The prothoracic sculpture is very different to that of any other species of the genus.

#### DECILAUS CURVIPES, n. sp.

Black; antennae and tarsi of a dingy-red. Moderately densely clothed with stout greyish or stramineous scales, interspersed with brown and sooty ones: denser on legs (where they are interspersed with stout setae) than elsewhere.

*Head* with dense, normally - concealed punctures. Rostrum stout, moderately curved; behind antennae with several partially-concealed grooves. Antennae inserted about one-third from apex of rostrum; scape about the length of five following joints; club subcontinuous with funicle. *Prothorax* rather lightly transverse; sides strongly rounded, apex about half the width of base; with dense, large, round punctures; with a short and feeble median carina. *Elytra* oblong-ovate, base not as wide as middle of prothorax; with rows of large, and generally somewhat transverse or angular, punctures. *Mesosternal receptacle* elevated from base to apex, emargination widely transverse. Two basal segments of *abdomen* with dense and coarse punctures, three apical segments considerably below level of the others. *Legs* short and stout; front tibiae strongly curved downwards in middle, with a subapical tooth, in addition to the strong apical hook; third tarsal joint rather deeply bilobed, but scarcely wider than second. Length, 6-8 mm.

*Hab.*—South Australia: Ardrossan (J. G. O. Tepper). Type, I. 1322.

The apex of each of the front tibiae is supplied with a curious red process, appearing like a rounded plate on its upper-surface, and forming the apical hook on its lower-surface. The tibiae are somewhat as in *apicatus*, but in that species the incurvature is confined to the upper-surface; in the present species the whole tibia is bent downwards at its middle. The apex of the rostrum is coarsely punctured, but the punctures are usually concealed. There are nine specimens under examination, two labelled Ardrossan, but the others without locality labels. They were apparently all taken many years ago, and all are more or less dingy; but this dingy appearance may be natural. The surface is everywhere covered with a dingy-greyish or muddy-brown crust, possibly of a mealy nature, upon which chloroform has no apparent action. The darker scales are usually, but not always, thinner than the paler ones.

#### DECILAUS HUMERALIS, n. sp

Black, antennae claws and tibial hooks of a dingy-red. Moderately clothed with fawn-coloured scales; much denser on tibiae than elsewhere.

*Head* and rostrum apparently much as in preceding species; but club stouter and abruptly wider than preceding joints. *Prothorax* as long as wide, sides strongly rounded, base truncate; with dense, coarse punctures, in places feebly confluent; with a narrow, continuous median carina. *Elytra* oblong-ovate, shoulders distinctly produced and clasping sides of prothorax; with rows of large, deep, and often angular punctures. Two basal segments of *abdomen* large, with very coarse punctures, especially on the second; three apical segments conspicuously depressed below the others; apical one with dense punctures and a subapical fovea. *Legs* short and stout. Length,  $8\frac{1}{2}$  mm.

*Hab.*—Australia (old collection). Type, I. 1323.

The type is covered with the same muddy-looking indumentum as are the specimens of the preceding species; the scales may normally be paler than as described, as where they were covered up (at the base of the head) they are of a rather pale stramineous. The front tibiae are armed much as in the preceding species, but they are not bent inwards. It differs also in its larger elytral punctures and conspicuous prothoracic carina. The type was probably from South Australia.

## DECILAUS ORDINARIUS, n. sp.

Dark-brown or black; antennæ and tarsi of a dingy-red. Densely clothed with stout stramineous or muddy-grey scales, sometimes sooty; but uniformly pale on under-surface of body and of legs.

*Head* with dense but comparatively small punctures. Rostrum moderately long and rather thin, sides lightly incurved to middle, base considerably wider than apex, and with coarse crowded punctures, elsewhere with smaller but sharply-defined ones. Antennæ thin, inserted slightly nearer base than apex of rostrum; scape scarcely as long as four following joints combined; first joint of funicle almost as long as three following combined, second as long as third and fourth combined. *Prothorax* strongly transverse, sides strongly rounded, apex less than half the width of base; with dense, round, deep, and fairly large, but partially-concealed punctures. *Elytra* oblong-cordate, shoulders feebly rounded and scarcely wider than prothorax; with rows of fairly large punctures in distinct striæ; interstices much wider than seriate punctures, themselves with dense but more or less concealed punctures. *Mesosternal receptacle* like half of an elevated ring. *Abdomen* with large, round, deep punctures on all segments, but largest of all on second, no segments depressed. *Femora* stout, rather strongly grooved, lightly dentate. Length,  $5\frac{1}{2}$ -6 mm.

*Hab.*—Northern Territory (Blackburn's collection); Queensland: Bloomfield River (C. French). Type, I. 1324.

An ovate ordinary-looking species, but with dentate femora. From the Tasmanian *coryssopus* (also so armed) it differs in its much larger punctures, of both prothorax and abdomen, and very different clothing. The scales are sparser and larger on the prothorax than on the elytra. The first joint of the funicle is unusually long.

## DECILAUS BIFURCATUS, n. sp.

♂. Black; antennæ and tarsi red. Moderately densely clothed with stout and feebly variegated, but more or less dingy-brown scales, denser on legs than elsewhere.

*Head* with crowded partially-concealed punctures. Rostrum stout, sides lightly incurved to middle; with moderately large punctures. Scape inserted two-fifths from apex of rostrum, the length of four basal joints of funicle; the two basal ones of these subequal in length. *Prothorax* almost as long as wide, sides strongly rounded; with dense, round, partially-concealed punctures, of rather small size (for genus); with a very feeble median carina. *Elytra* rather

short, base trisinate; with rows of large punctures in light striæ; interstices on basal half the width of, or narrower than, seriate punctures, but becoming wider posteriorly. *Mesosternal receptacle* distinctly raised; emargination widely transverse. *Abdomen* with small but rather dense partially-concealed punctures; first segment obliquely sulcate on each side of base, and with a feeble tubercle on each side of middle. *Femora* stout, strongly grooved, and feebly dentate; hind tibiæ with apical hook bifid; third tarsal joint wide and deeply bilobed. Length, 6-7 mm.

♀. Differs in having the rostrum somewhat longer and thinner, with smaller punctures, abdomen non-tuberculate and hind tibiæ with apical hook simple.

*Hab.*—Victoria: Alps, Mount Hotham, Fern Tree Gully (Blackburn's collection). Type, I. 1325.

In general appearance fairly close to *tibialis*, and with very similar hind tibiæ, but clothing of under-surface of male very different. The clothing there is somewhat paler than that of the upper-surface, but is otherwise very little different. The teeth are fairly distinct on the front femora, but scarcely traceable on the others.

#### DECILAU'S OOSOMUS, n. sp.

Black: antennæ and tarsi of a rather bright-red. Clothing not very dense

*Head* with crowded, partially-concealed punctures. Rostrum moderately stout. sides lightly incurved to middle; with coarse punctures, irregularly grooved behind antennæ. Antennæ as described in preceding species. *Prothorax* rather strongly transverse, sides strongly rounded, base truncate; with dense, large, round, deep punctures, becoming much smaller at apex. *Elytra* short, sides strongly rounded, extreme base no wider than base of prothorax; with rows of large, round, deep punctures, in very feeble striæ; interstices narrower than striæ, even posteriorly. *Mesosternal receptacle* strongly elevated, like half of a ring. *Abdomen* with irregular punctures. *Femora* stout, moderately grooved. Length,  $3\frac{3}{4}$ - $4\frac{1}{4}$  mm.

*Hab.*—South Australia: Port Lincoln (Blackburn's collection). Type, I. 1326.

A short species, with large punctures and conspicuously-rounded elytra. In general appearance it is something like *moluris*, but the elytral punctures are much larger and less oblong, etc. The prothoracic punctures are about the size of those of *cuniculosus*, but the elytral ones are much larger and differently shaped. The abdomen has large punctures on the first segment about the base and at its suture with the second,

the second has also a few large ones; elsewhere the punctures are much smaller, dense on the fifth, and sparse on the third and fourth. The three typical specimens are apparently all somewhat abraded. On the prothorax the scales are rather elongate, and each is set in a puncture, some of them are sooty, but the majority are fawn-coloured; on the elytra the scales in the punctures are decidedly smaller, but otherwise similar to those on the prothorax; but on the interstices such scales as are left are more or less circular, and vary from almost white to sooty. On the under-surface the scales are usually longer and paler, and on the legs and head denser, than elsewhere.

*DECILAUS MIRABILIS*, n. sp.

Deep shining-black, tip of prothorax and tibiæ diluted with red; antennæ, tarsi, and apical segment of abdomen paler. Almost entirely glabrous.

*Head* with a few large punctures in front. Rostrum stout, sides lightly incurved to middle, with a strong median carina and two smaller sublateral ones, all three continued almost to apex; with a row of strong punctures between each two carinæ. Antennæ rather thin, inserted about one-third from apex of rostrum; scape about the length of five following joints; club rather large. *Prothorax* strongly transverse, sides strongly rounded; with large, round punctures. *Elytra* subcordate, base truncate, sides strongly rounded and widest at about basal third; with rows of large punctures, in moderate striæ, interstices wider than striæ, with fine punctures and minute wrinkles. *Mesosternal receptacle* like portion of an elevated ring. *Abdomen* with two basal segments no longer than third and fourth, fifth almost as long as four basal ones combined, with a rather large but shallow median fovea. *Femora* rather long, strongly grooved; front tibiæ lightly dilated from base to apex, the others narrowest at apex and subangularly dilated near base. Length,  $1\frac{1}{2}$  mm.

*Hab.*—Queensland: Mount Tambourine, in rotting leaves (A. M. Lea). Type, I. 1327.

A minute black species, with unusually coarse sculpture. It may be necessary later on to refer it to a new genus. Under a Coddington lens the apical segment appears to be half the total length of the abdomen; the first and second are unusually short, irregularly concave, and on the type the suture between them cannot be traced, so that the abdomen appears to consist of but four segments only.

*DECILAUS TRIVIRGATUS*, n. sp.

Of a dingy-castaneous, under-surface darker, elytra more or less deeply stained with black on suture and sides. Sparsely

clothed with stramineous setæ, but in addition with fairly numerous long straggling hairs.

*Head* with coarse punctures in front. Eyes separated about two-thirds the width of rostrum at base, smaller, and with coarser facets than usual. Rostrum stout, sides incurved to middle; with rows of large punctures, in coarse series behind antennæ, smaller and more crowded in front of same. Scape inserted about one-third from apex of rostrum, about the length of funicle; club large. *Prothorax* strongly transverse, sides strongly rounded; with dense, coarse punctures. *Elytra* briefly subcordate, sides strongly rounded, and widest at about basal third: with rows of large punctures, in moderate striæ: interstices wider than striæ. *Mesosternal receptacle* like the third of an elevated ring. *Abdomen* with coarse punctures on the first and second and fifth segments, the others depressed and impunctate. *Femora* stout and lightly grooved. Length,  $1\frac{1}{4}$ - $1\frac{1}{2}$  mm.

*Hab.*—Queensland: Mount Tambourine, in rotting leaves (A. M. Lea). Type, I. 1328

A dumpy little species, clothed with long straggling hairs, as in the Western Australian *hispidus*, but otherwise very different. The bald portion of the head is normally almost entirely concealed. The elytra are sometimes of a rather bright-red, with the suture and dark sides (the dark lateral part sometimes extends to the fifth interstice), causing them to appear trivirgate, but usually the two colours are not sharply contrasted.

#### DECILAUS CALVICEPS, n. sp.

Reddish castaneous, in parts more or less deeply stained with black. Moderately densely but somewhat irregularly clothed.

*Head* with dense, partially-concealed punctures on a depressed space in front, elsewhere conspicuously bald. Eyes separated less than width of rostrum at base. Rostrum rather short and wide; with rather minute punctures, except about base, where they are more or less concealed; with a feeble median carina; notched on each side of base. *Antennæ* thin; scape inserted one-third from apex of rostrum and the length of funicle; club large. *Prothorax* moderately transverse, sides strongly rounded; with a row of four tubercular swellings across middle; with a strong carina terminated before base and apex; with coarse more or less concealed punctures. *Elytra* subcordate, sides strongly rounded and widest across basal third; with rows of partially-concealed punctures in distinct striæ. *Mesosternal receptacle* strongly elevated, emargination transverse. *Abdomen* with dense, concealed punctures, third and fourth segments somewhat depressed.

*Femora* stout, strongly grooved, and lightly dentate, front pair swollen in middle on one side; tibiae thin. Length, 2 mm.

*Hab.*—Queensland: Cairns district, in rotting leaves at Malanda (A. M. Lea). Type, I. 1329.

A small, wide, and somewhat angular species, referred to the genus with hesitation; the prothoracic tubercles being a decidedly aberrant feature. The clothing varies from pale stramineous to ochreous, and is denser and paler on the metasternum and basal segments of abdomen than elsewhere. On the elytra a large space on each side (the derm there deeply stained with black) is conspicuously glabrous, the punctures there are very distinct, but the striation is irregular; the whole being somewhat reminiscent of *Zenopropus mirus*. Each shoulder is also glabrous. From some directions the femora appear to be thin, although they are really rather largely dilated in the middle.

#### DECILAUS APICATUS, Lea.

A specimen from Port Lincoln is probably a large and partly abraded female of this species. It differs from the types in being much larger ( $7\frac{1}{2}$  mm.) with the tibial hooks much smaller and blunt (probably worn down); its rostrum is not quite so stout, is slightly less curved, and with punctures nowhere concealed. The clothing is much sparser than on the types (probably due to abrasion), and the individual scales are somewhat narrower.

#### DECILAUS TIBIALIS, Lea.

A male from Bell (Queensland) differs from the type in being smaller (5 mm.), and with the paler scales more numerous about base and apex of elytra. Three females, from the Blue Mountains, have the elytra very similarly clothed.

#### CARDIOPTEROCIS, n. g.

*Head* fairly large and evenly convex. Eyes rather small, widely separated, coarsely faceted. Rostrum of moderate length, rather wide, moderately curved. Antennae rather stout; scape inserted nearer apex than base of rostrum, and shorter than funicle; two basal joints of funicle rather long, the others very short; club ovate. *Prothorax* lightly transverse, sides strongly rounded, base almost truncate, apex produced. *Scutellum* small. *Elytra* elongate-cordate. *Pectoral canal* deep and wide, terminated between middle coxae. *Meso-sternal receptacle* level with coxae, walls thin and widely U-shaped; open. *Metasternum* short; *episterna* represented

only posteriorly. *Abdomen* large, first segment as long as second and third combined, its apex lightly incurved to middle, second longer than third and fourth combined. *Legs* of moderate length; femora edentate, lightly grooved; tibiae almost straight; tarsi rather thin, but third joint deeply bilobed.

This genus should be placed near *Decilaus*, and the typical species in size and shape is almost exactly like *D. acerosus*, although differing considerably in sculpture of under-surface and in clothing. The mesosternal receptacle is U-shaped, and at a glance appears similar to that of several species in which it has been described as slightly cavernous, but as the wall at its extreme base is very slight and quite vertical it has been regarded as open. Treating it as such the genus, in an (at present M.S.) table of genera allied to *Poropterus*, would be associated with *Poropterinus*, whose prothorax and elytra are very different. Treating it as slightly cavernous, it would (in the table referred to) be associated with *Erithioides*, whose mesosternal receptacle is conspicuously raised and vaulted, and whose scutellum and metasternal episterna are absent. The sides of the elytra are projected inwards, so as to cut off the front portion of the metasternal episterna, these in consequence appear tear-shaped, or like the upper portion of a note of exclamation (!) reversed.

CARDIOPTEROCIS VARIEGATUS, n. sp.

Dark-brown, in places black; antennae and tarsi red. Densely clothed with variegated scales, and with numerous stout, suberect ones, scattered about.

*Head* with dense concealed punctures. *Rostrum* almost the length of prothorax, parallel-sided; with dense punctures concealed towards base, towards apex smaller, denser, and clearly defined. *Scape* inserted not much nearer apex than base of rostrum. *Prothorax* regularly convex; with dense, concealed punctures. *Elytra* rather more than twice the length of prothorax, and at base but little wider, sides rather strongly and evenly rounded, and widest at about middle; with rows of more or less concealed punctures. *Under-surface* with dense, concealed punctures. Length, 3 mm.

*Hab.*—Queensland: Townsville (A. M. Lea). Type, I. 1526.

The majority of scales on the upper-surface are of a dingy light-brown or fawn colour. On the prothorax there is a large sooty spot, of irregular shape, on each side of the base, and extending to the middle. On the basal half of the elytra the scales are mostly sooty, but there are none about the base itself; on the apical half there are a few small sooty spots. On the



third interstice near base, and again for a short distance beyond middle, the clothing is almost white. On the under-surface the clothing is of a greyish-white. On the legs it is mostly greyish-white, but distinctly variegated with sooty. On the head it is mostly sooty, but on the rostrum whitish. The erect scales are usually, but not always, of similar colours to the depressed ones, amongst which they are placed. Occasionally a few are close together, but they do not form distinct fascicles. At a glance the four hind tibiae appear to be angularly dentate at the outer base, but this is probably entirely due to their clothing. The type is probably a male.

*ROPTOPERUS CALVICEPS*, n. sp.

♂. Blackish, in parts more or less obscurely diluted with red; antennæ and tarsi red. Densely clothed with muddy-brown scales, with larger, greyish ones scattered about, and condensed into numerous fascicles on upper-surface.

*Head* with most of surface bald and highly polished, a rather small space in front densely clothed. Rostrum wide at base, sides distinctly incurved to middle; basal half with coarse concealed punctures, apical half shining, and with minute ones. Scape short, inserted slightly nearer base than apex of rostrum. *Prothorax* slightly longer than wide, sides moderately rounded; punctures normally concealed. *Elytra* elongate, base moderately trisinate, shoulders less advanced than base near suture, sides moderately rounded; with rows of large partially-concealed punctures; with tubercular swellings supporting fascicles; of these there are four (including a small basal one) on the third interstice, three (including a small subbasal one) on the fifth, and two or three on the seventh. *Under-surface* with dense partially-concealed punctures. Basal segment of abdomen widely and shallowly depressed. Length,  $5\frac{1}{2}$  mm.

*Hab.*—Australia or Tasmania (Blackburn's collection). Type, I. 1450.

A narrow species somewhat suggestive of the New Zealand genus *Phrynixus*. On each elytron there are five fascicles larger than the others, and all fairly close together; each group commences with an antemedian one on the fifth interstice, and ends with one on the third at summit of posterior declivity. The type bears a green paper disc, signifying (if the specimen was sent by Mr. French) that it was from Tasmania.

*ROPTOPERUS SCUTELLARIS*, n. sp.

Black; abdomen and rostrum of a dingy-red, antennæ and tarsi paler. Densely clothed with soft scales, mostly

fawn-coloured, and with numerous fascicles on upper-surface.

*Head* with most of surface densely clothed, with a narrow bald space. Rostrum wide at base, parallel-sided in front of antennæ; basal third with coarse concealed punctures and a feeble median carina, elsewhere shining and with minute punctures. Scape short, inserted much nearer base than apex of rostrum. *Prothorax* moderately transverse, sides strongly rounded; punctures normally concealed; with eight conspicuous fascicles in two transverse series. *Scutellum* round and distinct. *Elytra* ovate-cordate, base strongly trisinate, sides strongly rounded; with rows of large partially-concealed punctures, in rather narrow striæ; third, fifth, and seventh interstices with rather loosely-compacted fascicles. *Abdomen* with basal segment rather strongly convex, intercoxal process with a curved row of large punctures; elsewhere almost or quite impunctate. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1451.

In general appearance something like *terra-reginæ*, but with a distinct scutellum, a character which readily distinguishes it from all others of the genus. The subapical tooth of each tibia is more distinct than usual. On each elytron there is a subtriangular medio-lateral space, on which the scales (including the fascicles) are paler than elsewhere. The abdomen of the type (which is probably a female) is almost entirely glabrous, but this may be due to abrasion. The prothoracic fascicles are unusually distinct. The extreme base of the elytra when viewed from in front is seen to have a polished undulating ridge in six lobes. In *basalis* the lobes are four in number, but that species differs also in having a sutural fascicle, and in being without a scutellum.

#### EXITHIUS EPHIPIATUS, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with large soft scales, mostly fawn-coloured, but feebly variegated with sooty ones; each elytron with a very conspicuous patch of white scales, not quite touching the side or suture.

*Head* evenly convex; with coarse concealed punctures. Rostrum moderately thin; tip with coarse punctures, elsewhere concealed. Scape inserted one-third from apex of rostrum, and the length of funicle. *Prothorax* distinctly transverse, sides strongly rounded, apex about half the width of base; with dense partially-concealed punctures. *Scutellum* small but distinct. *Elytra* with shoulders rounded, sides parallel to beyond the middle; with rows of large partially-concealed punctures. *Mesosternal receptacle* strongly elevated. *Metasternal episterna* rather wide posteriorly.

*Femora* with minute teeth, scarcely traceable through clothing. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1455.

With a conspicuous patch of white scales on the side of each elytron as in *Scleropoides trianguliferus* and *Hyperiosoma falcatum*, the patch halfway between apex of prothorax and apex of elytra. As the basal segment of its abdomen is quite flat in the middle, and the rostrum is densely clothed almost to its tip, the type is almost certainly a male.

#### EXITHIUS OBSCURUS, n. sp.

♂. Black; antennæ reddish. Densely clothed with ferruginous scales, feebly variegated with somewhat paler and sooty ones. Prothorax with six very feeble fascicles, elytra with numerous more distinct ones.

*Head* rather strongly convex, forehead feebly trisinate; with dense punctures, partially concealed between eyes. Rostrum rather long, sides almost parallel, lightly notched on each side of base; with dense punctures, coarse and partially concealed on basal half, smaller and clearly defined in front. Scape inserted about three-sevenths from apex of rostrum. *Prothorax* moderately transverse, sides strongly rounded, apex half the width of middle; with dense partially-concealed punctures; with a very feeble median carina or impunctate line. *Elytra* rather robust, sides almost parallel to beyond the middle, base moderately trisinate; with rows of large partially-concealed punctures; second to seventh interstices with feeble tubercular swellings, supporting rather feeble fascicles. *Mesosternal receptacle* moderately, but not suddenly, elevated in front. *Metasternal episterna* of moderate width. *Femora* stout, strongly dentate; tibiae bisinuate on lower-surface. Length,  $5\frac{3}{4}$ -6 mm.

♀. Differs in having the rostrum smoother, with sparser and smaller punctures and less of the base clothed; the basal segment of abdomen also is gently convex instead of flat in middle.

*Hab.*—Victorian Alps (Blackburn's collection); Tasmania: Huon River, in tussocks (A. M. Lea). Type, I. 1456.

At first glance somewhat resembling *musculus*, but without the conspicuously produced shoulders of that species; *simulator* has more parallel-sided elytra and mesosternal receptacle suddenly elevated.

#### EXITHIUS OBLIQUUS, n. sp.

Blackish-brown; legs, rostrum, and antennæ reddish. Densely clothed with large, soft, fawn-coloured scales, feebly

variegated with paler and darker ones. Prothorax with six fascicles, elytra with many small and a few large ones.

*Head* moderately convex; punctures normally concealed. Rostrum moderately long, sides incurved to middle, very feebly notched on each side of base; basal third with coarse partially-concealed punctures, elsewhere with smaller but clearly-defined ones. Scape inserted almost in middle of rostrum, scarcely half the length of funicle and club combined. *Prothorax* strongly transverse, sides strongly rounded, apex less than half the width of middle; punctures normally concealed. Elytra with sides lightly dilated to beyond the middle, and then rather strongly narrowed to apex, base trisinate; with rows of large almost-concealed punctures; third interstice with an elongated tubercle near base, the second with a somewhat smaller one at summit of posterior declivity, elsewhere with small rounded tubercles. *Mesosternal receptacle* suddenly elevated in front. Metasternal episterna rather narrow. Basal segment of *abdomen* moderately convex, its suture with second almost straight. *Femora* rather stout, feebly dentate. Length,  $3\frac{3}{4}$  mm.

*Hab.*—Victoria (Blackburn's collection). Type, I. 1457.

At a glance something like *conjunctus*, but fascicles differently disposed, and the two at summit of posterior declivity distinctly separated; the mesosternal receptacle is also more suddenly elevated, and its base is decidedly larger. On the prothorax there is a feeble dark oblique stripe on each side of the base. On the elytra there is a feeble pale oblique patch from each shoulder to near the suture. Some of the fascicles are composed of black scales. The third interstice has an elongated fascicle, supported by a tubercle, near the base, its apex feebly connected with a smaller one on the second; the second has a fairly large fascicle at summit of the declivity, appearing to mark the end of an oblique row of smaller fascicles that extend to the seventh interstice; and on the posterior half of the elytra there are many other small fascicles.

#### EXITHIUS TROPIDOPTERUS, n. sp.

Black; antennæ and tarsi of a rather bright-red. Densely clothed with scales mostly of a dingy-brown or sooty. Prothorax with six feeble fascicles, elytra with more.

*Head* with dense punctures, concealed in front; forehead trisinate. Rostrum rather wide, sides distinctly incurved to middle; with fairly large and rather dense punctures, clearly defined except at base, where they are coarser and partially concealed; with a feeble, impunctate median line. Scape inserted slightly closer to base than to apex of rostrum, the length of three following joints combined. *Prothorax* rather

strongly transverse, basal two-thirds almost parallel-sided; punctures normally concealed; with a feeble median carina. *Elytra* with sides feebly and irregularly dilated to apical third, then strongly and irregularly narrowed to apex, base trisinate; with irregular rows of large partially-concealed punctures; suture with a conjoint tubercle halfway down posterior declivity; each elytron produced at apex, and each with a strong and rather wide curved ridge, commencing at the second interstice at about the middle and terminated at the side, where it is suddenly narrowed. *Mesosternal receptacle* strongly elevated. Metasternal episterna narrow, but frontal triangle large and distinct. Basal segment of *abdomen* moderately convex, its suture with second rather feeble and curved in middle, but deep at sides. *Femora* stout, very feebly dentate. Length,  $4-4\frac{1}{2}$  mm.

*Hab.*—Victorian Alps (Blackburn's collection). Type, I. 1458.

The femoral dentition is extremely feeble and is quite concealed from most directions. The elytra are much as in *cariosus*, but the prothorax is very different. The conspicuous slightly curved ridges at the summit of the posterior declivity should prevent it from being confused with any other species. One of the types (they are probably both females) is rather badly abraded, but the other is evidently in good condition. The latter has the clothing of the under-surface moderately variegated, on the elytra its posterior declivity is mostly clothed with sooty scales; on its prothorax there is a somewhat dingy patch of pale scales across the middle and feebly connected with the middle of the base.

#### EXITHIUS AUCHMERESTHES, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with scales varying from a dingy-fawn or brown to sooty. Prothorax with six fascicles, elytra with more.

*Head* with normally-concealed punctures; forehead trisinate. Rostrum moderately stout, sides lightly incurved to middle; with dense and coarse punctures, partially concealed about base. Scape inserted in middle of rostrum, the length of three following joints combined. *Prothorax* moderately transverse, sides moderately rounded; punctures normally concealed. *Elytra* rather elongate, sides feebly rounded, base trisinate, shoulders prominent; with rows of large partially-concealed punctures; each with three rather large fasciculated tubercles in line with suture, fifth and seventh interstices with some smaller ones; suture with a few granules near base. *Mesosternal receptacle* strongly elevated. Metasternal episterna very narrow. *Femora* stout, edentate. Length, 4 mm.

*Hab.*—Victorian Alps (Blackburn's collection). Type, I. 1459.

In appearance fairly close to the typical form of *conspiciendus*, but femora edentate. Much the build of *obliquus*, but femora and clothing different. The three conspicuous tubercles on each elytron in line with the suture are probably all on the third interstice, but the type being unique it has not been abraded to make certain of this. As the basal segment of its abdomen is distinctly depressed in the middle it is probably a male.

#### ATHYREOCIS, n. g.

*Head* comparatively large, convex, partly concealed from above. Eyes feebly produced in front, widely separated, coarsely faceted. Rostrum rather short and wide, sides lightly but distinctly incurved to middle. Scape inserted nearer base than apex of rostrum, much shorter than funicle; funicle with two basal joints elongate; club briefly ovate. *Prothorax* lightly transverse, sides rounded, apex produced. *Scutellum* apparently absent. *Elytra* closely applied to and but little wider than prothorax, base trisinate. *Pectoral canal* deep and wide, terminated between middle coxæ. Mesosternal receptacle feebly raised, emargination widely transverse, cavernous. Metasternum very short; episterna narrow in middle but traceable throughout, or indistinct. *Abdomen* large; two basal segments large, the suture between them curved, second shorter than first, but longer than third and fourth combined. *Legs* rather long and thin; femora not at all or very feebly grooved, feebly or not at all dentate; tibiæ scarcely compressed, the front ones feebly bisinuate on lower-surface.

Allied to *Exithius*, but scutellum absent, head evenly convex, and abdominal sutures distinct. The clothing is very dense, and scattered amongst the adpressed scales are numerous stiff erect ones, in places compacted into feeble fascicles. The hind femora when placed in a line with the abdomen extend to or just pass the tip of the elytra, except on *albonotatus*; on one specimen of *tarsalis* they all appear to be very feebly dentate, but this appearance may simply be due to feeble clusters of scales; on the four hind femora of *tibialis*, however, teeth are certainly present. I was at first inclined to regard the five species here described as belonging to two genera, but as the only generic features in which they differ are the metasternal episterna and the femora, and the points of difference are only noticeable with difficulty, it was considered advisable to treat them as belonging to but one genus. In all the species there are dense round punctures on

the head and prothorax, but these are normally quite concealed; there are also rather dense punctures on the under-surface, some of which can be traced before abrasion.

Metasternal episterna not traceable throughout.

Claw-joint with stout erect scales ... *tarsalis*

Claw-joint at most finely setose ... *echinatus*

Metasternal episterna traceable throughout.

Four hind femora dentate ... *tibialis*

Femora edentate.

Elytra with whitish scales about

posterior declivity ... *albonotatus*

Elytra without such scales ... *nigronotatus*

#### ATHYREOCIS TARSALIS, n. sp.

Black; antennæ and tarsi reddish. Very densely clothed with muddy-brown scales (muddy-grey on under-surface), interspersed with numerous erect, stout ones, frequently sooty, and in places compacted into fascicles.

*Rostrum* lightly curved, scarcely as long as prothorax; basal third with coarse concealed punctures, elsewhere shining and with small but clearly-defined ones. *Prothorax* somewhat uneven. *Elytra* about twice as long as wide, almost parallel-sided to middle; with rows of large punctures normally almost, or quite, concealed. *Metasternal episterna* not traceable throughout. Hind femora extending to tip of elytra. Length,  $3\frac{1}{4}$ - $3\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea); Kuranda (G. E. Bryant). Type, I. 1511.

There are two distinct fascicles on the third interstice of each elytron: one at basal third, the other beyond the middle; on the prothorax there are four feeble ones across the middle. Each of the three typical specimens, when viewed from behind, appears to have a small dark spot on each side of the base of the prothorax; from directly above the spots are less distinct, and from in front they are invisible. The erect scales are very conspicuous on the legs, and a few are present even on the claw joint of each tarsus.

#### ATHYREOCIS ECHINATUS, n. sp.

Reddish-brown; antennæ and tarsi somewhat paler. Densely clothed with muddy-brown scales, thickly interspersed with stout erect (and mostly sooty) ones, in places compacted into fascicles.

*Rostrum* moderately curved, about as long as prothorax, basal fourth with concealed punctures, elsewhere highly polished and with small clearly-defined ones. *Prothorax*

almost evenly convex. *Elytra* feebly dilated from base to beyond the middle, and then rounded to apex; with rows of large, normally almost, or quite, concealed punctures. *Metasternal episterna* not traceable throughout. *Femora* edentate, hind pair just passing tip of elytra. Length,  $3\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea.) Type, I. 1512.

The derm of the type, which is probably a female, is as described, but it is probable that it is sometimes black. The clothing is much as on the preceding species, but the claw joint is entirely without stout scales, although there are a few on some of the other tarsal joints. On the prothorax there are four feeble fascicles across the middle, and two at apex. On the elytra there is an elongated loose fascicle on the third interstice, at about the basal third, and a feeble one beyond the middle; from some directions the two appear to be feebly connected.

#### ATHYREOCIS TIBIALIS, n. sp.

♂. Of a dingy dark-brown, sometimes almost black; antennæ and tarsi red. Densely clothed with muddy-grey scales, feebly variegated on elytra; interspersed with stout, erect scales, in places compacted into fascicles.

*Rostrum* lightly curved, scarcely as long as prothorax; basal third with coarse concealed punctures, elsewhere shining and with dense and comparatively coarse ones except along the middle. *Prothorax* evenly convex. *Elytra* elongate-subcordate, sides feebly rounded; with rows of rather large punctures in striæ, only the striæ normally visible. *Metasternal episterna* traceable throughout. *Femora* feebly dentate, hind pair not quite extending to apex of elytra; middle tibix angularly dilated at the external middle. Length,  $2\frac{1}{2}$ – $2\frac{3}{4}$  mm.

♀. Differs in having the rostrum slightly longer, with smaller punctures, and middle tibix not angularly dilated and dentate at the external middle.

*Hab*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1513.

In general appearance close to the following species, but four hind femora dentate as well as grooved. The teeth are certainly small, but they are quite distinct from some directions. The front femora are also dentate, but the teeth are extremely minute, invisible from most directions and normally concealed by clothing. On the elytra there are remnants of two very feeble pale fascix, one across basal third and one at summit of posterior declivity. They appear fairly distinct on account of the feeble dark fascicles on the third interstice;



these are situated at the basal fourth and about the middle. On the prothorax the erect scales are rather numerous, but they are not compacted into fascicles, or at least not into distinct ones. Most of the erect scales are more or less sooty, but on the legs they are mostly whitish. The middle tibiae of the male are peculiar, but their outlines are somewhat obscured by the clothing, although in certain lights very distinct.

*ATHYREOCIS ALBONOTATUS*, n. sp.

Black, in parts diluted with red; antennae and tarsi reddish. Densely clothed with somewhat variegated scales, thickly interspersed with stout erect ones, mostly sooty on upper-surface, mostly whitish on legs.

*Head* and *rostrum* much as in preceding species; *prothorax* and *elytra* much the same. *Metasternal episterna* narrow in middle but traceable throughout. *Femora* edentate, hind pair not quite extending to tip of elytra. Length,  $2\frac{1}{4}$ - $2\frac{1}{2}$  mm.

*Hab* —Queensland: Cairns district (A. M. Lea). Type, I. 1514.

In general appearance close to *Achopera parva*, but metasternum distinctly shorter than the following segment. On the type the clothing is evidently in perfect condition, and is mostly of a pale muddy-brown or fawn-colour (paler on the under-surface). On the prothorax there is a feeble sooty spot on each side of the base, on the elytra there are several feeble sooty spots, and some distinct white ones, the latter are near the suture on the basal third, and irregularly crown the posterior declivity, where they form a somewhat V-shaped pattern on each elytron. On two other specimens the sooty and white markings are traceable, but are much less distinct; the summit of the posterior declivity being crowned with feeble spots, not forming V's. The stout scales, although numerous, nowhere form distinct fascicles. The grooves on the femora are seen with difficulty, and on the front pair are extremely faint.

*ATHYREOCIS NIGRONOTATUS*, n. sp.

♂. Blackish-brown; antennae and tarsi reddish. Densely clothed with somewhat muddy-brown scales thickly interspersed with stout erect and usually sooty ones, in places condensed into fascicles. Under-surface with paler scales than on upper-surface.

*Rostrum* rather lightly curved, scarcely the length of prothorax, basal third with concealed punctures; elsewhere shining, and, except for a narrow line along middle, with

dense and rather coarse ones. *Prothorax* rather lightly convex. *Elytra* feebly dilated to beyond the middle, and then distinctly narrowed to apex; with rows of moderately large punctures in deep striæ, the punctures normally almost concealed, but the striæ moderately distinct. *Metasternal episterna* narrow in middle, but traceable throughout. *Femora* edentate, feebly grooved, especially the front pair, hind ones almost extending to apex of elytra. Length,  $2\frac{1}{4}$ - $2\frac{2}{3}$  mm.

♀. Differs in having the rostrum slightly longer and thinner, less of the base clothed, and elsewhere more polished and with smaller and sparser punctures.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1515.

On the prothorax there is a rather large obscure sooty patch on each side of the base. On the third interstice of each elytron there are two rather distinct fascicles: a fairly elongate one at basal third, and a smaller one beyond the middle; from the hind margin of the subbasal fascicle to the shoulder there is an indistinct stripe of pale scales. On the prothorax the stout scales on one specimen form very feeble fascicles across the middle, but on three others no fascicles can be traced there. One specimen has the entire derm of a rather pale-red, but this may be due to immaturity; it has also traces of a second oblique fascia beyond the middle

#### TRIPTOCIS, n g.

*Head* of moderate size, base shining and impunctate. Eyes rather small, widely separated, coarsely faceted. Rostrum moderately long and not very thin, lightly curved. Antennæ moderately thin, scape inserted nearer apex than base of rostrum, and the length of funicle, two basal joints of funicle moderately long, the others very short, club subovate. *Prothorax* transverse, sides rounded, base truncate. *Scutellum* absent. *Elytra* widest near base, thence decreasing to apex, base truncate. *Pectoral canal* deep and wide, terminated between middle coxæ. Mesosternal receptacle strongly and suddenly elevated, base strongly keeled, emargination strongly transverse; cavernous. *Metasternum* very short; *episterna* very thin. *Abdomen* large, first segment as long as three following combined, its apex almost straight, second as long as third and fourth combined. *Legs* moderately long; femora grooved and dentate; tibiæ compressed and moderately curved; tarsi thin.

The polished forehead and very short metasternum indicate that this genus is allied to *Poropterus*. The metasternal episterna are extremely narrow, with the inner suture of each

very feebly impressed, and the hind tip disappearing under the elytra, so that in an (at present manuscript) table of the allies of *Poropterus*, it would be associated with *Gymnoporopterus*, to which in fact it appears to be close, but from which it differs in its dentate femora and more rounded eyes, with decidedly coarser facets.

TRIPTOCIS PUNCTICOLLIS, n. sp.

Black, in places feebly diluted with red; sides of elytra with a bluish gloss; antennæ and tarsi red. Prothorax with a few whitish scales on sides, elsewhere almost glabrous; elytra with greyish scales in sutural region. Legs moderately densely, the under-surface more sparsely, clothed.

*Head* with dense and coarse punctures in front, elsewhere polished and without distinct punctures. Rostrum about as long as front femora, sides very feebly increasing in width to apex; near base with coarse punctures, elsewhere with much smaller but distinct ones; with a narrow median line on basal two-thirds. *Prothorax* moderately transverse, apex more than half the width of middle; with dense and rather coarse, clearly-defined punctures. *Elytra* strongly convex, subcordate, sides oblique from base to basal fourth, thence rapidly decreasing in width to apex; each with three rows of fairly large punctures in distinct striæ towards suture; elsewhere with smaller and more distant punctures, in very feeble striæ. *Under-surface* with rather coarse punctures. *Legs* coarsely punctured; front femora feebly grooved and feebly dentate, the others more distinctly grooved and moderately dentate. Length,  $2\frac{1}{2}$  mm.

*Hab.*—Queensland: Mount Tambourine, from rotting leaves (A. M. Lea). Type, I. 1519.

The major portion of the side of each elytron appears to be normally glabrous and highly polished, with a distinct steely-blue gloss; the sutural portion is moderately clothed for a space extending to about three interstices from the suture itself, and is of a dingy-red, with distinct rows of punctures.

ANCHITHYRUS RETICULATUS, Lea.

The type of this species is a small male. I have recently taken nine specimens in the Cairns district ranging in length from  $3\frac{3}{4}$  to  $4\frac{1}{2}$  mm. Although generally black, the derm is sometimes of a dark reddish-brown. The male has the rostrum with sides distinctly incurved to middle, and antennæ inserted almost in exact middle; its basal half has coarse but more or less concealed punctures. The female has rostrum longer, somewhat thinner, with coarse punctures only near base, elsewhere shining, and with rather small but clearly-defined punctures; the sides at the basal third are almost parallel, but thence

feebly dilate to apex; the antennæ are inserted distinctly nearer base than apex

*IMALIODES LONGIPES*, n. sp.

♂. Black, in parts diluted with red. Densely clothed with ashen-grey scales, in places thickly interspersed with stout suberect ones.

*Head* with dense concealed punctures. Eyes rather finely faceted. Rostrum moderately long, not very stout, somewhat dilated in front, apical third with dense punctures, concealed elsewhere. Antennæ rather thin; scape inserted one-third from apex of rostrum, as long as funicle: two basal joints of funicle subequal in length. *Prothorax* about as long as wide, sides evenly rounded, apex not much narrower than base; with dense and rather shallow, concealed punctures. *Scutellum* absent. *Elytra* ovate, strongly convex, each separately rounded or almost truncate at base, base no wider than prothorax, but sides strongly rounded; with rows of very large punctures, becoming smaller posteriorly; non-tuberculate. Third and fourth segments of *abdomen* level with second and fifth. *Legs* long; femora moderately stout, edentate, scarcely grooved, hind pair distinctly passing elytra. Length, 5½-6 mm.

♀. Differs in having the rostrum somewhat longer, punctures concealed only at base, elsewhere shining and with numerous rather small, clearly-defined punctures; scape inserted not quite so close to apex of rostrum; and basal segment of abdomen feebly convex in middle instead of flat.

*Hab.*—Queensland: Mount Tambourine (H. J. Carter and A. M. Lea); New South Wales: Tweed River (H. W. Brown). Type, I. 1547.

The edentate femora associate this species with *frater*, from which it is distinguished by the non-fasciate elytra. The legs are much longer than those of *ovipennis*, and the hind femora distinctly pass the elytra. In the elytra and long legs this and the following species resemble *Anchithyrus*, but the eyes are finely faceted. From some directions the first joint of funicle appears to be a trifle shorter than the second, but it really is of exactly the same length.

*IMALIODES BINODOSUS*, n. sp.

♀. Blackish: antennæ and tarsi obscurely reddish. Densely clothed with muddy-brown scales, somewhat paler on under- than upper-surface. With numerous stout scales interspersed.

*Head* with concealed punctures. Eyes rather large and with fine facets. Rostrum moderately long, rather wide at

base, narrowed to antennæ, and then parallel-sided to apex; about base subopaque and with coarse punctures, elsewhere shining and with minute ones. Scape inserted about two-fifths from base of rostrum, distinctly shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* lightly transverse, sides gently rounded; with very dense, concealed punctures. *Scutellum* minute. *Elytra* subovate; base almost truncate, but feebly notched at scutellum, and with shoulders very feebly produced; sides somewhat dilated to beyond the middle; with rows of large, deep punctures, becoming smaller posteriorly; third interstice with a tubercular swelling at basal third. Third and fourth segments of *abdomen* level with second and fifth. *Legs* rather long; femora not grooved, scarcely visibly dentate, hind pair passing tip of elytra. Length, 5 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1548.

In some respects close to *edentatus*, but with considerably longer legs. In these resembling *ovipennis*, but differing from that species (as also from the preceding one) in the bituberculate elytra and presence of a scutellum. The femoral teeth are very minute, and scarcely visible through the clothing.

#### IMALIODES LATIPENNIS, n. sp.

Black; antennæ and tarsi red. Densely clothed with rusty-brown scales; thickly interspersed with stout suberect ones. Under-surface with somewhat paler, and even denser, clothing than on upper-surface.

*Head* with concealed punctures. Eyes rather small and with coarse facets. Rostrum short and thick, with an obtuse median ridge; punctures concealed except at apex, where they are numerous. Scape short and stout, inserted one-third from base of rostrum, the length of two following joints combined; of these the first is shorter than the second. *Prothorax* moderately transverse, sides strongly rounded, apex about half the width of base; punctures concealed. *Scutellum* absent. *Elytra* scarcely longer than wide, strongly convex, base lightly trisinate, shoulders very feebly produced, sides strongly rounded; with rows of very large punctures; non-tuberculate. *Mesosternal receptacle* more strongly elevated than usual. Third and fourth segments of *abdomen* depressed below others. *Legs* short; femora stout, distinctly grooved, edentate, terminated before apex of abdomen. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Mount Tambourine, from rotting leaves (A. M. Lea). Type, I. 1549.

A very short, compact species, allied to *subfasciatus*, but smaller, scape shorter and inserted nearer base than apex of rostrum: *edentatus* is about the same length, and has similar clothing on the upper-surface, but its antennæ are inserted at a slightly different position, and its elytra are much narrower. The clothing on the under-surface is unusually dense, and on the type (which is probably a male) is matted together by dirt or by an exudate; but across the second segment a closely-set mass of pale scales, like a transverse fascia, is very conspicuous, on the first segment also a similar mass of scales, but incurved at the middle, can be traced. Probably, however, the clothing is sexually variable.

#### EMYDICA.<sup>(13)</sup>

Dr. Gestro sent a specimen as *Emydica platynota*, Pasc., labelled as having been taken by Beccari at Ansus, in New Guinea (the original collector and locality). It might, therefore, fairly be regarded as a co-type. The specimen has a small but distinct fasciculate tubercle, at about the apical fourth, on the fifth interstice of each elytron. The sides of its prothorax and elytra are margined with closely-set scales projected outwards, so that the margins appear to be more acute than they really are. The whole of its upper-surface is clothed with muddy-grey scales. The original figure (pl. ii., fig. 1) is a very poor one, and gives a misleading idea of the species.

In catalogues the genus should be placed near *Imalithus*, whose only known species is also greatly depressed. The genus referred to here as an Australian species is now to be described.

#### EMYDICA BREVISETOSA, n. sp.

♂. Reddish-brown; antennæ and tarsi red. Rather densely clothed with white or whitish scales, variegated in places (and especially on elytra) with pale-brown ones. Fifth interstice on each elytron with a narrow fascicle at the apical third. Margins with a closely set fringe of stout, slightly variegated, brownish scales. Upper-surface with short, upright, and rather dense setæ. Front tibiæ and tarsi fringed beneath with long and almost golden setæ.

*Head* with dense concealed punctures. Rostrum almost as long as prothorax, lightly curved, moderately wide at base but narrowed to antennæ, thence almost parallel-sided; with very dense and rather coarse punctures concealed on basal half. *Prothorax* very flat, about once and one-half as wide as long, sides gently rounded, apex trilobed, median lobe about one-third the width of base; with rather small punctures. *Scutellum* small but distinct. *Elytra* flattened, slightly wider than prothorax, almost parallel-sided to near

(13) Pascoe, Ann. Mus. Civ. Gen., 1885, p. 255.

apex; with eight rows of distinct punctures between suture and each side; interstices about twice the width of punctures. *Under-surface* with more or less concealed punctures. *Femora* conspicuously grooved and edentate. Length, 6 mm.

♀. Differs in having the rostrum longer and thinner, punctures concealed only about basal fourth, and elsewhere very small, although usually clearly defined. Antennæ inserted nearer base than apex of rostrum, instead of in exact middle. Abdomen more convex, and front legs with normal clothing.

*Hab.*—Queensland: Cairns district (F. P. Dodd); Cooktown (H. W. Brown). Type, I. 1520.

With outlines much as in *platynota*, but with larger, sparser, and less depressed scales, and in addition with numerous short erect setæ; these are very distinct from the sides, but almost invisible from above. The lateral fringes of the prothorax and elytra are also more conspicuous, and the fringes on the front tibiae of the male are shorter and more compact. The scales on the under-surface are closely applied to the derm, and have the usual laminated appearance, but on the upper-surface they all have a curiously rough, subgranular appearance. The legs have feeble brownish rings or blotches.

#### PLATYTENES.<sup>(14)</sup>

This genus is remarkably distinct on account of the large finely-faceted eyes, thin rostrum, very short scape (which is inserted almost at base of rostrum), and large scutellum; but in particular by the metasternal episterna. These, instead of running level with the sides of the elytra, as in all other (at least Australian) genera of the subfamily, semicircularly encroach upon them from near the base to almost level with the hind coxæ. In the original description Pascoe referred it to the *Cryptorhynchides* *vrais*, but stated that it was impossible "to approximate it to any known genus." Subsequently, in recording it from New Guinea, he placed it next to *Perissops*. I think, however, that on account of its thin rostrum and comparatively long metasternum, with large episterna, it is perhaps better regarded as being one of the (not very close) allies of *Chatectetorus*.

#### PLATYTENES VARIUS, Pasc.<sup>(15)</sup>

This curious weevil can now be recorded as Australian, as a specimen was in the collection of the late Rev. T. Blackburn, labelled as having been sent by Mr. French from

(14) Pascoe, Journ. Linn. Soc., x., 1869, p. 466.

(15) *L. c.*, p. 467, pl. xviii., fig. 1; Ann. Mus. Civ. Gen., 1885, p. 269.

North Queensland. It is widely distributed in the Malay Archipelago and New Guinea. Pascoe described the typical specimens as variable, and the three specimens before me (from Queensland, the Fly River,<sup>(16)</sup> and Aru) are all somewhat different in clothing; but they agree in having four small dark fascicles (placed as it were each at the corner of a small square) at the apex of the prothorax; and a distinct patch of whitish scales at the apex of the elytra, and another on each side near the middle. The original figure is somewhat misleading, as the insect is made to appear rather strongly convex, instead of which it is unusually flat, and in fact feebly concave along the middle; the figure (1b) of the under-surface, however, is more satisfactory.

BRACHYCIS, n. g.

*Head* rather small, concealed from above. *Eyes* moderately large, finely faceted. *Rostrum* long and thin, feebly curved. *Antennæ* thin; scape inserted about middle of rostrum, the length of funicle; two basal joints of funicle elongate, the others transverse; club elongate-elliptic, sutures oblique. *Prothorax* strongly transverse. *Scutellum* distinct. *Elytra* scarcely longer than wide, base closely applied to prothorax and no wider than same. *Pectoral canal* deep, terminated between middle coxæ. *Mesosternum* composed of four pieces on each side between coxæ and elytra; receptacle depressed on each side, but middle raised, cavernous, and with U-shaped walls. *Metasternum* almost as long as the following segment; episterna wide. *Abdomen* with two basal segments large, first almost as long as second to fourth combined. *Legs* rather short; femora stout, strongly dentate; tibiæ compressed. Squamose, tuberculate, winged.

An extraordinary genus of doubtful affinities, but the rather long metasternum, with wide episterna, and long and but feebly curved rostrum seem to associate it with the allies of *Chætectetorus*, perhaps near *Euthyrrhinus*, although the elytra are not mucronate. In the table of genera allied to *Chætectetorus* <sup>(17)</sup> it would be associated with *Pseudometyrus*, with which, however, it has but little in common. The clothing normally partially conceals the side pieces of the mesosternum, but on two of the specimens before me their sutures are distinct; starting from the coxa the first appears to be irregularly four-sided, but its front curves round the coxa till it meets the receptacle, the second is a triangle, the third is irregularly four-sided, but at first appears to be a triangle with its apex cut off at the metasternum; the fourth is also four-sided, but is wider than long.

(16) From Dr. Gestro.

(17) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.



## BRACHYCIS THORACICUS, n. sp.

Blackish; antennæ and tarsi obscurely reddish. Densely clothed with very pale-brown or fawn-coloured scales, becoming darker on posterior half of elytra, and on a large oval median space on prothorax. Scales of under-surface of body and of legs mostly whitish.

*Head* with punctures normally concealed. Rostrum slightly longer than prothorax, sides dilated about base, but almost parallel elsewhere; sides about base with coarse partially-concealed punctures, in middle of base feebly ridged; elsewhere with small but clearly-defined punctures. *Prothorax* twice as wide as long, middle with a wide depression, bounded in front by a conspicuous semicircular ridge, between each side of the ridge and the margins strongly bisinuate; with very dense and small normally-concealed punctures. *Elytra* not much wider than long, base the width of base of prothorax, and somewhat sinuous, parallel-sided to about the middle, and then widely rounded; with rows of rather small partially-concealed punctures; suture rather strongly elevated and granulate in middle, third interstice with two elongated tubercles, one about basal third, the other submedian, fourth with a feeble swelling midway between the two on third, fifth with a rather strong one at about basal third; elsewhere with a few slight swellings, posterior declivity long and abrupt. *Under-surface* with dense punctures. Length, 6-8 mm.

*Hab.*—Australia (Blackburn's collection); Queensland: Darling Downs (C. French); Mount Tambourine (R. Illidge). Type, I. 1480.

From above the prothorax appears to have a wide median lobe overhanging the head, with a smaller lobe on each side between it and the margin. From in front the apical sides appear to be cut away with three obtuse tubercles bounding the hind portion of each excavation. In Mr. H. Hacker's private collection (now in the Berlin Museum) there was a specimen of this species with subopaque and finely-carinated rostrum; it is probably a male, in which case the three typical specimens are probably females. Commander J. J. Walker had a specimen from Mittagong (New South Wales) much smaller and darker than the types.

## ODOSYLLIS SCUTELLARIS, n. sp.

Black; antennæ and tarsi more or less reddish. Densely clothed with ochreous-brown scales, variegated with small obscure spots of sooty and of whitish ones.

*Head* with coarse punctures and a few shining granules. Rostrum moderately long, sides distinctly inflated towards,

but notched at base; basal half with coarse crowded punctures, apical half with sparser and much smaller ones. Scape inserted about two-fifths from apex of rostrum; two basal joints of funicle moderately long and subequal. *Prothorax* strongly transverse, apex about one-third the width of base; with dense concealed punctures; with numerous small granules, each with a setiferous puncture in front. *Scutellum* conspicuously elevated, each side densely clothed. *Elytra* not much wider than prothorax, sides almost parallel to beyond the middle, and then strongly narrowed to apex, which is conjointly mucronate; with rows of moderately large punctures in distinct striæ; interstices with numerous small, shining granules, mostly in rows, but irregular on basal half of the third, and somewhat crowded on a raised space near base. *Under-surface* with dense punctures. *Legs* moderately long; hind femora lightly, middle moderately, front strongly dentate. Length, 12 mm.

*Hab.*—Queensland: Cairns district (F. P. Dodd). Type, I. 1525.

The acutely-elevated scutellum readily distinguishes from *crucigera*, the only previously described Australian species. The figure of *ingens*<sup>(18)</sup> will give a good general idea of this species, except that the legs of the figure are rather longer. That species also is described as having an elevated scutellum, but its clothing is very different and its under-surface is densely granulate. It is perhaps also close to the briefly-described *gemmata*, but that species is said to be larger (15 mm.) and with the elytral punctures almost obsolete. Most of the elytral tubercles are obscurely diluted with red. The scales are larger on the abdomen and sides of sterna than elsewhere, but they are almost as large on the pronotum. On the prothorax there are five small pale spots equi-distant across the middle; on the elytra the pale spots are very feeble and few in number; but the sooty ones are more numerous, the more distinct ones being at the summit of the posterior declivity, on the fourth interstice at base, and on the third near apex. The sex of the type is doubtful; the punctures of the rostrum appear to be of a masculine nature, but the front tibiæ have but a few short setæ on the apical half, very different to the conspicuous fringes of the males of other species.

#### ISAX PLANIPENNIS, Lea.

A female from Dorrigo, in Dr. Ferguson's collection, differs from the types in having numerous black setose scales

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(18) Ann. Mus. Civ. Gen., 1885, pl. ii., fig. 8.

scattered amongst the paler ones on the prothorax. On two specimens from Mount Tambourine the prothoracic clothing is similar, but each elytron has two distinct spots of reddish-ochreous scales, one on the shoulder and one on the fourth interstice near apex; similar scales clothe the sides of the metasternum, and are fairly numerous on the sides of the abdomen. On several other specimens remnants of similarly-coloured patches are present, and their absence is probably due either to abrasion or to staining.

PHLÆOGLYMMA MIXTA, Lea.

Two specimens from Quorn appear to represent a variety of this species; they differ from the types in being smaller (5-5½ mm.), with the fascicles and patches of dark scales less sharply defined. One was labelled "*Euoropis*?" by the late Rev. T. Blackburn, and it certainly has tibiae angularly dentate at the outer base; the only character given by Pascoe in separating *Euoropis* from *Acalles*. But whilst the species certainly belongs to *Phlæoglymma*, almost certainly it does not belong to *Euoropis*, the described sculpture of *E. castanea* seeming to denote that it really is, as stated, allied to *Acalles*; whilst *Phlæoglymma* belongs to the widely separated *Chaetectetorus* group.

EPHYRCUS MINOR, n. sp.

Reddish-brown, in parts almost or quite black; antennæ (club infusate) and tarsi reddish. Densely clothed with scales, varying from mostly pale to mostly sooty. With some stout, suberect ones scattered about.

*Head* with dense, concealed punctures. Rostrum not very thin; shining and with minute punctures, concealed only close to base. Scape inserted about one-third from base of rostrum, scarcely half the length of funicle and club combined; club large. *Prothorax* lightly transverse, base truncate and less than twice the width of apex; with dense, concealed punctures. *Elytra* not much wider than prothorax, and more than twice as long, sides parallel to beyond the middle; with rows of large, almost-concealed punctures; second interstice with a feeble fascicle near middle, and third with one near base, very feeble ones elsewhere. *Under-surface* with rather numerous, partially-concealed punctures. Length, 1½-2 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1780.

Close to *parvus*, but even smaller than that species and with very feeble fascicles. The four typical specimens are apparently of one sex. On the prothorax most of the scales are pale, but on one specimen they are mostly dark, but with a conspicuous patch of pale ones on each hind angle. There

are four very feeble fascicles of dark scales across middle and two at apex. On the elytra most of the scales are greyish, but with obscure sooty spots, and a vague, sooty, median fascia, sometimes broken up into spots. The stout scales are frequently of a snowy whiteness, but the majority are sooty. On the head, except in front, the scales are mostly sooty.

ACHOPERA BIFASCIATA, n. sp.

♂. Reddish-brown, in parts somewhat obscured; antennæ and tarsi red. Densely clothed with greyish scales, variegated with paler and darker ones; with some stout suberect scales scattered about, but not forming fascicles.

*Head* with dense, round, concealed punctures. Rostrum rather short and wide: punctures concealed throughout. Scape inserted slightly nearer base than apex of rostrum. *Prothorax* lightly transverse, feebly convex; with dense, round, concealed punctures. *Elytra* about one-fourth wider than prothorax, parallel-sided to near apex; with rows of large, almost, or quite, concealed punctures; striation distinct through clothing. *Under-surface* with dense concealed punctures. Basal segment of abdomen widely and feebly concave in middle. Length, 3-3½ mm.

♀. Differs in having rostrum slightly longer, apical half with sparser clothing, so that some of the punctures are visible; scape inserted distinctly nearer the base of rostrum, and basal segment of abdomen gently convex throughout.

*Hab* —Queensland: Cairns district (A. M. Lea). Type, I. 1534.

In general appearance fairly close to *maculata*, but smaller, and elytra bifasciate. On the type male the scales on the under-surface and legs are almost white, but each femur has a more or less distinct sooty patch. On the upper-surface most of the scales are of a light slaty-grey. On the elytra there are two distinct and somewhat curved, or oblique, pale fasciæ: one across basal third, rendered more distinct by some sooty spots about it; and one across summit of posterior declivity. On each side the former terminates on the shoulder and the latter at the middle. The prothorax has a medio-basal obscure spot, and about the middle a few small pale ones. On the female the scales are less distinctly variegated, most of them being of a darker slaty-grey than on the male, and the fasciæ are ill-defined, although traceable.

ACHOPERA PARVA, n. sp.

Reddish-brown; antennæ and tarsi paler. Densely clothed with greyish scales, variegated with patches of darker ones; with stout suberect scales scattered about.

*Head* with concealed punctures. Eyes rather small. Rostrum moderately long, feebly curved, very feebly dilated from base to apex; basal half with concealed sculpture, elsewhere shining and with minute punctures. Scape inserted about one-third from base of rostrum. *Prothorax* about as long as wide, moderately convex, sides somewhat rounded; with dense, round, concealed punctures. *Elytra* about one-third wider than prothorax, sides almost parallel to beyond the middle; with rows of large, almost, or quite, concealed punctures. *Metasternum* distinctly longer than the following segment; the latter flat in middle. *Claw-joint* unusually long. Length, 2 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1535.

In the table of genera allied to *Chaetectetorus*<sup>(19)</sup> would be associated with *Menios*, from which it is at once distinguished by the edentate femora. The prothorax is less depressed than is usual in *Achopera*, but as that appears to be the only discrepancy it was referred to that genus. It is the smallest of the genus, and, except for some minute species of *Ephrycus*, the smallest of all the Australian members of the *Chaetectetorus* group. The sex of the type is doubtful, the rostrum and insertion of antennæ appear to denote that it is a female, but the basal segment of abdomen is quite flat in the middle. The antennæ are almost flavous. On the upper-surface there are two small sooty spots at the base of the prothorax, several at base of elytra, a series across summit of posterior declivity, and a few below same; but they are all rather ill-defined. On the legs also there are some obscure sooty patches.

#### ACHOPERA ISABELLINA, n. sp.

Dark reddish-brown, in parts almost black; antennæ and tarsi reddish. Densely clothed with more or less greyish or light-brown scales. With moderately stout, subdepressed scales, more or less regularly distributed, and forming a regular row on each elytral interstice.

*Head* rather convex; with very dense concealed punctures. Rostrum comparatively long, and rather thin, moderately curved, parallel-sided except for a slight increase in width near base; basal third with concealed sculpture, elsewhere somewhat shining, and with dense clearly-defined but rather small punctures. Scape inserted slightly nearer base than apex of rostrum, half the length of funicle and club combined. *Prothorax* rather lightly transverse, somewhat convex, sides strongly rounded, base strongly bisinuate;

(19) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.

with dense, round, concealed punctures. *Elytra* about one-third wider than prothorax, base trisinate, parallel-sided to beyond the middle, with rows of large concealed punctures; but striation traceable through clothing. *Under-surface* with dense concealed punctures. Basal segment of abdomen flat in middle. Length, 6 mm.

*Hab.*—North Queensland (Blackburn's collection). Type, I. 1536.

The largest of the genus. The tarsi are moderately densely setose on the upper-surface, the setæ extending to the claw joint, the third is wide and deeply bilobed, but these characters are not sufficiently important to exclude it from *Achopera*. The scales are of an almost uniform colour throughout; although on each shoulder there is a large patch where they are somewhat paler than elsewhere. Except on antennæ, tarsi, and parts of the rostrum they everywhere conceal the derm. But on the prothorax they are larger than elsewhere, and give it a plated appearance; each also is slightly depressed at its middle. On the abdomen also the scales have a somewhat plated appearance, although they are smaller and more overlapping than on the prothorax. The sex of the type is doubtful.

#### ACHOPERA SABULOSA, Lea.

A male from Port Lincoln differs from the types in having the large scales on the prothorax and elytra somewhat wider; but I can find no other differences

#### DERETIOSUS ZOPHERUS, n. sp.

Dark reddish-brown, in parts almost black; antennæ reddish. Very densely clothed with muddy-brown scales. With numerous stout suberect scales interspersed, and in places compacted into fascicles

*Head* with punctures entirely concealed. Rostrum rather long, moderately curved, sides lightly incurved to middle; punctures concealed behind antennæ, but crowded in front. Antennæ thin, inserted about one-third from apex of rostrum. *Prothorax* moderately transverse, surface somewhat uneven; with crowded concealed punctures. *Elytra* parallel-sided to beyond the middle; with rows of large, round, almost-concealed punctures; third interstice with an elongated granulated tubercle near base, and a slight swelling beyond the middle. Punctures of *under-surface* concealed. *Femora* strongly triangularly dentate; tibiæ bisinuate on lower-surface. Length, 5 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1537.

On the prothorax there are four loose fascicles across the middle and two at apex. On the elytra there are several feeble fascicles, but the third interstice on each elytron of the type has been partly abraded; probably, however, the elongated tubercle near the base supported a conspicuous fascicle, and the slight swelling beyond the middle may have supported another. The clothing is very different to that of any of the previously described Australian species of the genus; and the species, in fact, quite strongly resembles *Chætectetorus egenus*, whose femora and mesosternum, however, are very different.

#### AGATHICIS, n. g.

*Eyes* very finely faceted. *Rostrum* straight, not very long. *Scape* short, inserted nearer base than apex or rostrum; club ovate, free. *Prothorax* feebly transverse. Other characters as in *Chætectetorus*.<sup>(20)</sup>

In the table of genera allied to *Chætectetorus*<sup>(21)</sup> would be associated with *Ephrycinus*, with which it has little in common. The species described below appears at first like a large rough *Chætectetorus*, and is undoubtedly close to that genus, but the facets of the eyes are unusually small.

#### AGATHICIS DISTINCTUS, n. sp.

♂. Blackish; antennæ and tarsi of a dingy-red. Very densely clothed with greyish or pale greyish-brown scales, closely applied to derm; some stouter ones scattered about. Elytra with two long and very conspicuous fascicles about the middle, and some smaller ones elsewhere, as also on prothorax.

*Head* with dense concealed punctures. *Rostrum* distinctly shorter than prothorax, rather wide at base, sides distinctly incurved to middle; with very dense rough punctures concealed on basal two-fifths. First joint of funicle slightly stouter and slightly longer than second. *Prothorax* almost as long as wide, sides on basal three-fourths flattened out, apex narrow and produced over head; middle irregularly elevated, but at extreme base foveate, wide impressions between middle and margins; with dense concealed punctures. *Scutellum* small, but round and distinct. *Elytra* very little wider than prothorax, base trisinate, sides parallel to near apex; with rows of large partially-concealed punctures; interstices, especially the third and fifth, somewhat irregular on account of small tubercular swellings supporting fascicles.

<sup>(20)</sup> As defined in Proc. Linn. Soc., N.S.W., 1908, p. 713.

<sup>(21)</sup> L. c., 1909, pp. 594-595.

*Under-surface* with dense concealed punctures. *Legs* rather short; hind femora scarcely extending to apical segment. Length, 8-10 mm.

♀. Differs in having apical two-thirds of rostrum glabrous, with small but clearly-defined punctures, and obscurely reddish. Scape inserted nearer base of rostrum: large elytral fascicles smaller, and basal segment of abdomen rather more convex.

*Hab.*—North Queensland (Dresden Museum, No. 14903, from E. Weiske); Cairns district (A. M. Lea). Type, I. 1481.

The large fascicles are on the middle of the third interstice of each elytron. The scales composing them are wide and thin, so that from certain directions they appear to be almost hair-like; there are other but much smaller fascicles on the posterior declivity and about the base; the extreme apex has four feeble fascicles, so that it appears to be trisinate. On the prothorax there is a distinct fascicle on each side of apex, and some feeble ones across middle. There is sometimes a feeble sooty ring on each tibia. There are at least five impressions on the pronotum: a medio-basal isolated one of rather small size, a larger one on each side of middle, and a less distinct one in front of each of same; but these sometimes subconfluent; but there are also sometimes smaller depressions on the margins. The specimens from the Cairns district (seven) were taken, in company with some small bees, feeding at a resinous substance, exuding from a kauri pine (*Agathis robusta*) near Nelson.

#### MENIOS.

In the table of genera allied to *Chortectetorus*<sup>(22)</sup> this genus was placed with those (C. C.) having the metasternum longer than the first abdominal segment: and this is certainly the case with the typical species, *internatus*: but in *nebulosus* and *albifasciatus* it is a trifle shorter.

#### MENIOS SINUATUS, n. sp.

♂. Reddish-brown, in parts somewhat paler. Very densely clothed with pale fawn-coloured scales, conspicuously variegated with snowy and sooty spots; with numerous stout suberect scales scattered about, and in places compacted into fascicles.

*Head* with concealed punctures. Rostrum rather wide, lightly curved, sides feebly incurved to middle; punctures

(22) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.



dense and rather coarse in front of antennæ, elsewhere concealed. Scape inserted slightly nearer apex than base of rostrum, and slightly shorter than funicle; club rather large. *Prothorax* moderately transverse, sides feebly rounded on basal half and then strongly narrowed to apex; punctures concealed. *Elytra* not much wider than prothorax, parallel-sided to beyond the middle; with rows of large concealed punctures, but striation traceable; second and third interstices obtusely tuberculate beneath fascicles. *Under-surface* with concealed punctures. *Femora* stout; front pair very feebly, middle moderately, hind pair strongly dentate. Length, 3 mm.

*Hab.*—North Queensland (Blackburn's collection). Type, I. 1782.

The metasternum is just perceptibly shorter than the following segment, and this associates the species with *nebulosus* and *albifasciatus*. The clothing on the type is evidently in perfect condition. On the head there are three white spots, and on the prothorax eight (but of the latter two on each side are not visible from above). On the elytra the white scales form an irregular fascia (wide at the suture) across summit of posterior declivity, and a few spots, mixed with sooty ones, on the middle of each side. The stout scales form very feeble fascicles on the prothorax. On each elytron they form a distinct fascicle, supported by a tubercle, on the second interstice about the middle, and two on the third: one near base, the other beyond the middle. The three are almost in a line, and apparently on the third, but that interstice is narrowed, and curves around the fascicles on the second. This character alone will readily distinguish the species from all previously described ones. The third interstice is also dilated at its two fascicles, but the sinuation of the striæ adjacent to same is not quite so pronounced. The femoral dentition is also distinctive.

METRYCULUS MEDIOFASCIATUS, n. sp.

♂. Black; antennæ and tarsi red. Densely clothed with brown and sooty scales.

*Head* with dense concealed punctures. Rostrum moderately long, distinctly curved, almost parallel-sided; with dense punctures, concealed behind antennæ and somewhat obscured in front. Scape inserted one-third from apex of rostrum, almost the length of funicle. *Prothorax* moderately transverse; with dense, round, concealed punctures. *Elytra* oblong-cordate, about one-fourth wider than prothorax, base moderately trisinate; with rows of large almost-concealed punctures: third and fifth interstices slightly raised. *Mesosternal receptacle* moderately long, with a distinct median keel. *Femora* distinctly grooved. Length,  $5\frac{2}{3}$ -7 mm.

♀. Differs in having the rostrum somewhat longer, sides more distinctly incurved to middle, punctures much smaller and concealed only at basal third, scape inserted not quite as close to apex of rostrum, and abdomen more convex.

*Hab.*—New South Wales: Galston (D. Dumbrell); Queensland: Mount Tambourine (A. M. Lea). Type, I. 1530.

Differs from the generic description in having the scape almost as long as the funicle, and inserted distinctly nearer apex than base of rostrum; but, as the other features agree, it does not appear desirable to refer it to a new genus. The scales on the prothorax and under-surface are large, and individually distinct. On the prothorax the sooty ones are in the majority. On the elytra they clothe most of the surface, the paler ones form a distinct but not sharply-defined fascia before the middle, commencing narrowly at the suture, and gradually, and then rapidly dilated, till it covers more than half of each side, but towards the sides it is sometimes broken up; on the apical portion of the elytra also the paler scales are rather numerous. On the under-surface and legs there are but few sooty scales. On the elytra there are numerous stout sub-erect scales, more numerous on the odd than on the even interstices, but they do not form distinct fascicles. The third and fifth interstices have their derm but little elevated, but owing to their clothing they appear to be rather distinctly elevated. Looking up the elytra from behind the stout scales appear almost like rows of opaque granules

*METIRYCLUS MEDIOMACULATUS*, n. sp.

♂. Black, in parts diluted with red; antennæ and tarsi red. Densely clothed with scales, larger and more clearly defined, individually, on abdomen than elsewhere; each elytron with a distinct pale spot just before the middle. Upper-surface with numerous stout and more or less erect scales scattered about.

*Head* with dense concealed punctures. Rostrum of moderate length, almost parallel-sided; apical half with crowded and fairly large punctures, basal half with larger but concealed ones. Scape distinctly shorter than funicle, inserted about two-fifths from apex of rostrum. *Prothorax* moderately transverse; with dense partially-concealed punctures. *Elytra* not much wider than prothorax, base evenly trisinate, sides parallel to near apex; with rows of large partially-concealed punctures; third and fourth interstices lightly elevated, but the third conspicuously so near base. *Mesosternal receptacle* rather short and not keeled. *Femora* rather lightly grooved. Length,  $4\frac{1}{2}$ -6 mm.

♀. Differs in having the rostrum somewhat longer and thinner, with much smaller (but still distinct) punctures, concealed only about base; scape inserted in middle of rostrum, and abdomen more convex.

*Hab.*—Queensland: Cooktown (Blackburn's collection); Endeavour and Bloomfield Rivers (C. French); Kuranda (H. Hacker); Cairns (E. Allen). Type, I. 1531.

With two elytral spots as in *bimaculatus*, but third interstice conspicuously elevated near base. On the upper-surface the scales are mostly of a slaty or sooty-brown, but on one specimen they are mostly of a light-brown. Some of the erect scales are ochreous, but they are usually sooty; on the elytra they are more numerous on the third and fifth interstices than elsewhere. The distinct spot on each elytron is of irregular shape, and on the third and fourth interstices; the scales composing it are usually whitish, margined with ochreous. On the under-surface and legs the scales are usually of a dingy-grey, but sometimes of a slaty-grey.

*METYRCULUS CINERASCENS*, n. sp.

♀. Dark reddish-brown; rostrum black, except at apex. Densely clothed with greyish scales.

*Head* with punctures entirely concealed. Rostrum moderately long, sides distinctly incurved to middle; with numerous small punctures, rather sparse about middle, but becoming denser and larger towards base. Scape inserted almost in exact middle of rostrum, distinctly shorter than funicle. *Prothorax* moderately transverse, rather convex; with dense concealed punctures. *Elytra* not much wider than prothorax, base rather lightly trisinate, sides almost parallel to beyond the middle; with rows of large partially-concealed punctures; third interstice with an obtuse swelling near base. *Mesosternal receptacle* with thin U-shaped walls; almost open. *Femora* indistinctly grooved. Length, 4 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1532.

The mesosternal receptacle is longer and more typically U-shaped than in *bimaculatus*, but as, when viewed from in front, its upper margin is seen to slightly overhang the base, it could not strictly be regarded as open. In build and general appearance it is something like *Tychreus reversus*, but that species has conspicuously dentate femora. The rostrum is of a shining-black, except at the tip; but the general surface, where visible, is of a rather dingy reddish-brown; the claw joints and tibial hooks are paler, but the antennæ are almost black, although diluted with red in parts. The scales are all more or less greyish, but towards the base of the

elytra they have a slightly sooty appearance, and towards the apex they are whitish. There are a few stout suberect scales scattered about. The type is without clothing on the rostrum, but probably the male is clothed on at least the basal half.

*METYRCULUS SINUATUS*, n. sp.

♂. Of a dingy brownish-red, some parts paler. Densely clothed with scales mostly of a light slaty-brown or grey, variegated with paler and darker ones; with numerous stout suberect scales scattered about, and in places condensed into fascicles.

*Head* with dense concealed punctures. Rostrum rather wide and short, sides diminishing in width to middle; with dense punctures concealed on basal half. Scape inserted in middle of rostrum, distinctly shorter than funicle. *Prothorax* moderately transverse, subconical; punctures quite concealed by clothing. *Elytra* rather short and convex, about one-third wider than prothorax, base feebly sinuous, sides parallel to beyond the middle; with rows of large almost-concealed punctures, but striation distinctly traceable; with feeble swellings beyond the middle supporting fascicles, but third interstice with a conspicuous one near base. *Meso-sternal receptacle* with basal portion rather short, and not distinctly keeled. *Femora* feebly grooved and very indistinctly dentate. Length,  $2\frac{1}{2}$ -3 mm.

♀ Differs in having rostrum slightly longer, with smaller punctures, concealed only on basal third; scape inserted slightly nearer base than apex of rostrum and abdomen more convex.

*Hab.*—New South Wales: National Park (Taylor Bros. and A. M. Lea); Jenolan (J. C. Wiburd and A. M. Lea). Type, I. 1533.

The femoral teeth are extremely minute, and are so concealed by scales that it is only from certain directions that they can be seen at all. In fact from some specimens they appear to be absent. The scales are mostly of a rather light brownish-grey, verging to almost white on parts of the legs and under-surface; on the elytra there is sometimes a sooty spot on each side about the middle; across the summit of the posterior declivity there is a more or less distinct fascia of pale scales, on one specimen almost of a snowy whiteness, but usually rather dingy. On the prothorax the suberect scales are more numerous on the apical than on the basal half, but they do not form distinct fascicles. On each elytron there are four fascicles, a distinct one crowning the tubercle on third interstice near base, and three smaller (sometimes very feeble) ones, close together about the middle: one on the second

interstice, one level with it on the fifth, and the other on the third, slightly beyond the others; the latter one is sometimes entirely composed of whitish scales, and sometimes of sooty and whitish ones, and the striae at its sides are deflected out of straight lines by the slight swelling on which it is supported.

A specimen from Wollongong differs in being very small ( $2\frac{1}{4}$  mm.) and with the elytral scales mostly sooty, but with the pale fascia distinct. Another, of the same size, from Cairns, has the scales on the upper-surface of an uniform pale slaty-grey, with a sooty spot on each side. On all the specimens, however, the postmedian sinuation of the second and third striae is distinct.

#### MENIOMORPHA INCONSTANS, Lea.

Some specimens, from the Northern Territory, have whitish scales occupying most of the upper-surface. On one specimen the dark scales occupy a subquadrate medio-basal patch on the prothorax, a patch on each elytron at the base between scutellum and shoulder, and an irregular postmedian band, the band irregularly dilated on suture both in front and behind. Queensland specimens usually have the white occupying much less of the surface—usually a strongly curved mark on each side of elytra at the base, the two meeting at the scutellum, and an irregular patch on each side of apex. On the prothorax the only white markings are remnants (at base and apex) of a median line.

#### TYCHREUS.

In the diagnosis of this genus,<sup>(23)</sup> based largely on the typical species (*camelus*), the eyes were described as finely faceted, the rostrum thin, and the mesosternal receptacle almost open; and these characters apply to most species of the genus. But some of the smaller ones have the eyes moderately or rather coarsely faceted, and with the rostrum of the males rather wide. In three species also (*sellatus*, *incanus*, and *nigronotatus*) the receptacle, although its emargination is U-shaped, has the base considerably wider than the sides, although not to such an extent as is usual in *Pseudometyrus* and *Metyrus*.<sup>(24)</sup>

#### TYCHREUS REVERSUS, Lea.

The facets of the eyes of this species, although hardly coarse, are still larger than in most species of the genus. A small (3 mm.) male from Cairns has a conspicuous dark fascia

<sup>(23)</sup> Proc. Linn. Soc., N.S.W., 1909, p. 617.

<sup>(24)</sup> This to a certain extent is sexual; as in *T. sellatus*, the base is wider in the male than female.

at the basal third of its elytra, but at the sides the fascia is directed forwards, and almost extends to the base. Two other males have but feeble remnants of the dark, subquadrate, prothoracic patch.

TYCHREUS SELLATUS, Pasc.

On the typical form of this species the clothing is mostly of a dingy-whitish colour, with a large ovate dark spot, common to prothorax and elytra.

Var. A. On Mount Tambourine a form occurs whose scales are mostly pale ochreous-brown, and without a distinct ovate patch on the upper-surface, but generally there is a small dark spot of scales on the second interstice at the basal third.

TYCHREUS LANIFER, n. sp.

♂. Blackish, in places obscurely diluted with red, scape and funicle of a rather dingy-red. Densely clothed with soft, white, woolly-looking scales, in places compacted into depressed fascicles; a transverse patch near base of elytra, another at summit of posterior declivity, and some feeble spots on sides of a sooty-brown; femora, and sometimes the tibiae, with obscure rings of sooty-brown. Under-surface moderately densely clothed.

Eyes large and finely faceted. Rostrum moderately stout, sides lightly incurved to middle; with coarse punctures, concealed except on apical third. Scape as long as funicle, inserted one-third from apex of rostrum. Prothorax lightly transverse, sides strongly rounded, base strongly bisinuate, disc uneven; with dense, normally-concealed punctures. Elytra wider than prothorax, base strongly trisinuate, parallel-sided to beyond the middle; with series of large, more or less concealed, punctures; interstices with numerous feeble swellings, supporting feeble fascicles. Mesosternal receptacle U-shaped, but base fairly large. Femora stout, strongly dentate. Length,  $5\frac{1}{2}$ -6 mm.

♀. Differs in having the rostrum thinner, sides less noticeably incurved, and clothed only on basal fourth. Scape inserted slightly more distant from apex of rostrum, and base of mesosternal receptacle decidedly smaller.

Hab. — North Queensland (Blackburn's collection); Cairns (A. M. Lea). Type, I. 1452.

In build close to *sellatus*, and I was at first inclined to regard it as a variety of that species, but besides the different clothing it has the rostrum decidedly shorter and wider in both sexes. At first glance it appears to be an elongated form of *Chimades lanosus*, with much shorter clothing than usual. The prothorax has four fascicles, supported by feeble tubercular swellings across middle, two behind same, and one in middle of base.

## TYCHREUS LONGICORNIS, n. sp.

Blackish; antennæ of a rather pale-red, but club darker. Densely clothed with rather large, soft, fawn-coloured scales, closely applied to derm; interspersed with short, stout, semi-erect, paler scales; but on prothorax the interspersed scales are darker, or at least no paler than the others. Prothorax with two distinct fascicles in middle, and a smaller one near each side; elytra with an elongated fascicle on third interstice and some feeble ones elsewhere.

*Eyes* rather large, facets of medium size. Rostrum rather long, moderately curved, sides decreasing in width from base to antennæ, thence parallel-sided to apex; basal third with sculpture concealed, elsewhere shining and with minute punctures. Antennæ thin; scape inserted in middle of rostrum, the length of funicle; club elongate-elliptic. *Prothorax* strongly transverse, sides strongly rounded and somewhat flattened, except in front, apex less than half the width of base; punctures normally concealed. *Elytra* rather short, not much wider than prothorax; with rows of large partially-concealed punctures; with many small, irregularly-disposed swellings and an interrupted ridge on third interstice from near base to near middle. *Mesosternal receptacle* U-shaped, walls thin and lightly elevated. *Front femora* strongly dentate, the others moderately so; middle tibiæ somewhat angular near outer base. Length, 6 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1453.

Nearer to *camelus* than to any other described species, but the large elytral fascicles not quite in the same position, the mesosternal receptacle somewhat different, elytra almost conjointly rounded at apex, and facets of eyes larger. The antennæ and rostrum are longer than usual. On the elytra there is a curved row of feeble tubercles on the posterior declivity, an oblique row from the fascicle on third interstice to each shoulder, and a few elsewhere. The type is probably a female.

## TYCHREUS DISCICOLLIS, n. sp.

Blackish, in parts diluted with red; antennæ and tarsi paler. Densely clothed with scales, mostly fawn-coloured and with more or less conspicuous fascicles.

*Eyes* rather prominent, with facets of medium size. Rostrum moderately long, feebly curved, sides decreasing in width to antennæ, thence parallel-sided to apex; basal two-fifths with dense concealed punctures, elsewhere shining and with small but distinct ones. Scape inserted slightly nearer apex than base of rostrum, slightly longer than funicle; funicle with first joint stouter and distinctly longer than

second; club elliptic, almost as long as funicle. *Prothorax* strongly transverse, base almost truncate, sides somewhat flattened and strongly rounded, apex scarcely half the width of base, punctures normally concealed. *Elytra* rather short, distinctly but not much wider than prothorax; with rows of large partially-concealed punctures, subtuberculate beneath fascicles. *Mesosternal receptacle* briefly U-shaped, very feebly elevated. *Femora* moderately dentate. Length,  $3\frac{3}{4}$  mm.

*Hab.*—Queensland: Mount Tambourine (A. M. Lea). Type, I. 1454.

A pretty little species, at first glance appearing close to *dilaticollis*, but fascicles near suture different, the subbasal one being much larger and longer, the submedian one larger and the third one (of *dilaticollis*) absent; there are other differences also. Along the middle of the prothorax the clothing is much darker than on the sides; on it there are six fascicles: two distinct ones in middle, two loose ones at apex, and a loose one on each side. On the elytra there is a narrow transverse dark line about one-fourth from apex, and some feeble spots on the sides. The second interstice has a distinct fascicle at summit of posterior declivity, and the third has an elongated and very conspicuous one towards the base; there are also some stout erect scales scattered about, notably at the apex. On the under-surface the clothing is almost uniformly stramineous.

#### TYCHREUS INCANUS, n. sp.

♂. Of a dingy reddish-brown; antennæ and tarsi paler. Densely clothed with soft muddy-grey scales, in places feebly variegated, and with some stout scales interspersed; with some moderately distinct fascicles. Under-surface with clothing almost white.

*Eyes* rather prominent, with rather coarse facets. Rostrum moderately wide, sides distinctly incurved to middle; basal two-fifths with punctures concealed; elsewhere shining and with fairly large clearly-defined punctures. Scape inserted about two-fifths from apex of rostrum, the length of funicle. *Prothorax* strongly transverse, sides strongly rounded, base almost truncate and fully twice the width of apex; punctures dense but normally concealed. *Elytra* short, scarcely wider than prothorax, parallel-sided to beyond the middle, base not trisinate; with rows of large, rough, almost-concealed punctures; surface uneven in places, and subtuberculate beneath fascicles. *Mesosternal receptacle* widely U-shaped, walls thin and strongly elevated. *Femora* moderately dentate. Length,  $3\frac{1}{2}$  mm.

♀. Differs in having the rostrum thinner, with smaller



and sparser punctures, but concealed only close to base, and scape inserted nearer the middle of rostrum.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1455.

The coarse facets to the eyes would exclude this species from *Tychreus*, and place it in *Acrotychreus*, according to the table given in Proc. Linn. Soc., N.S.W.,<sup>(25)</sup> but its legs are very different to those of that genus. Its mesosternal receptacle also has the base wider than in most species of *Tychreus*. In build it is much like *fumosus*, but with coarsely-faceted eyes, rostrum shorter, the scales differently coloured, and fascicles differently disposed. On the male the clothing of the upper-surface is scarcely variegated, but on the female there is a distinct and fairly large medio-basal dark patch on the prothorax, and a strongly curved line on each elytron, commencing at the fascia on the third interstice, and touching the side at the basal third. On the prothorax there are two feeble median fascicles, and remnants of others at the sides and apex. On the elytra there are rather numerous very feeble fascicles, but a distinct and moderately long one on the third interstice near base.

#### TYCHREUS LATIFRONS, n. sp.

Of a dingy reddish-brown. Densely clothed with soft scales, mostly fawn-coloured, or somewhat ochreous; with stout scales scattered about, and in places condensed into fascicles.

*Eyes* rather coarsely faceted. *Rostrum* rather stout, sides distinctly incurved to middle, apex as wide as base; extreme base with concealed sculpture, elsewhere shining and with rather small clearly-defined punctures. *Scape* inserted in middle of rostrum, distinctly shorter than funicle; club rather briefly ovate. *Prothorax* moderately transverse, sides moderately rounded, base bisinuate and not twice the width of apex; punctures normally concealed. *Elytra* rather short, basal half parallel-sided; with rows of large partially-concealed punctures; subtuberculate beneath fascicles. *Meso-sternal receptacle* rather strongly elevated at base, and rapidly sloping to apices; walls thin and widely U-shaped. *Front femora* lightly, middle moderately, hind strongly dentate. Length, 3 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1456.

The facets of the eyes are rather coarser than in most species of the genus, although not as coarse as in *incanus*. In general appearance it is something like a small specimen

(25) For 1909, pp. 594-595.

of *reversus*, but with feeble fascicles at summit of posterior declivity, rostrum distinctly shorter and wider, and inflated at apex; *fumosus* is wider, with different clothing and rostrum. In many species of the genus the rostrum is slightly dilated from the antennæ to the apex, but the apex is not as wide as the base; but in this species it is quite as wide. On each elytron the sides are rather largely variegated with black scales, and the same are continued in two feeble zones to the suture, and with the fascicles in same (one on the third interstice near base, one on the second near middle, and two smaller ones on the third) also black. On the third, at summit of posterior declivity, there is a fascicle of whitish scales. On the prothorax there is a subquadrate, medio-basal patch of dark scales.

EURYMETOPCIS, n. g.

*Head* rather flat, entirely concealed from above. *Eyes* widely separated, coarsely faceted. *Rostrum* feebly curved, base wide, but decreasing in width to beyond the middle. *Scape* inserted somewhat nearer apex than base, shorter than funicle; two basal joints of funicle elongate; club elongate-ovate. *Prothorax* oblong. *Scutellum* minute. *Elytra* distinctly wider than prothorax at base. *Pectoral canal* deep and wide, terminated just beyond front coxæ. *Mesosternal receptacle* somewhat raised, emargination widely transverse; cavernous. *Metasternum* elongate, not much shorter than the following segment. *Abdomen* rather long, sutures straight, intercoxal process narrow, first segment almost as long as the three following combined, second the length of fifth, and slightly longer than third and fourth combined. *Legs* moderately long; femora shallowly grooved.

The dilated front of the prothorax of the typical species is somewhat suggestive of *Exithius cariosus*, but is essentially different, as in that species the extreme apex is very narrow, whereas in this species the whole apex is produced and bilobed. But the long metasternum indicates that the genus is widely separated from *Exithius* and it really belongs to the *Chaetectorus* group, and provisionally may be placed near *Tychreus*. The whole of the derm, except of the apex of the rostrum, is densely clothed with large soft scales, giving it a somewhat laminated appearance, and quite concealing the metasternal episterna. No femoral teeth are visible, but about the middle of each femur a feeble swelling may be noticed, probably denoting that a minute tooth is there covered up by scales. When the head is viewed directly from above only the upper edges of the eyes are visible. Wings are probably present, but I have not made certain of same.

## EURYMETOPOCIS BILOBUS, n. sp.

Densely clothed with somewhat variegated scales, mixed with stouter ones, condensed in places into fascicles.

*Head* evidently with dense but entirely-concealed punctures; with a distinct inter-ocular fovea. Rostrum on apical half with small but clearly-defined punctures, elsewhere concealed. *Prothorax* slightly longer than wide, basal two-thirds parallel-sided, apex somewhat dilated and distinctly bilobed, derm concealed. *Elytra* about twice the length of prothorax, and base about one-fourth wider, sides somewhat uneven; with rows of large punctures, traceable through clothing; with a very conspicuous tubercle crowned with stout scales on third interstice near base; third, fifth, and seventh with small fascicles or tubercles on basal half. Length,  $6\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1476.

The tarsi, antennæ, apical half of rostrum, and underparts of head more or less reddish, but the rest of the insect is so densely clothed that the derm is concealed, and the type being unique and in beautiful condition it has not been partially abraded. It was beaten from a newly-felled tree at Malanda. On the prothorax most of the scales are of a dingy-brown, the sides and apex are fringed with stouter ones, and there are two fascicles on the disc. On the basal half of the elytra (except for a large scutellar fawn-coloured patch) the scales are similarly coloured, but on the apical half they are whitish-grey: on the under-surface, legs, head, and base of rostrum the scales are mostly of a greyish-brown, mixed with stouter and darker ones. From the sides the apex of the prothorax appears as a wide flat ridge, overhanging the head.

## THEREBIOSOMA VARIEGATUM, n. sp.

♂. Black; antennæ of a dingy-red. Densely clothed with stout variegated scales.

*Head* with dense normally-concealed punctures. Rostrum moderately stout, slightly decreasing in width from base to antennæ, thence parallel-sided to apex: basal two-fifths with coarse partially-concealed punctures, elsewhere with smaller but clearly-defined ones, an impunctate line along middle between antennæ. Antennæ rather stout; scape inserted slightly nearer apex than base of rostrum, about half the length of funicle and club combined: first joint of funicle about as long as second and third combined, second about as long as third and fourth combined. *Prothorax* moderately transverse, sides strongly rounded, base strongly bisinuate and more than twice the width of apex: with dense normally-concealed punctures and with a feeble median carina. *Elytra*

very little wider than prothorax, parallel-sided to apical third, base strongly trisinate; with rows of large partially-concealed punctures; interstices with dense normally-concealed ones. *Under-surface* with rather dense punctures. Basal segment of abdomen obliquely flattened in middle. *Legs* stout; femora rather lightly dentate; each tibia with a strong apical hook and a moderately strong subapical tooth. Length, 6.8½ mm.

♀. Differs in having the rostrum somewhat longer and thinner, antennæ inserted slightly nearer base than apex of rostrum, and basal segment of abdomen convex in middle.

*Hab.*—Queensland: Cairns district (A. M. Lea): Kuranda (G. E. Bryant). Type, I. 1465.

Differs from *rhinaioides* in being larger, very differently clothed, mesosternal receptacle longer, and femora dentate. In general appearance it is remarkably close to *Neozeneudes dives*, but the mesosternal receptacle is U-shaped, strongly concave, although not cavernous, with very thin walls, middle tibiæ not bidentate externally, etc. The second joint of funicle is also very different. The femoral teeth are rather small and partially concealed by clothing. The majority of the scales are of a more or less ochreous colour, but on some specimens hardly more than stramineous. On the prothorax there is always a small sooty spot on each side of the base, and often four feeble ones across middle and two at apex. On the elytra the sooty scales are in large irregular patches or zones, and occupy from one-third to a little more than half of the surface; they are usually absent, or almost so, from the posterior declivity, and most numerous about the middle and near the base. On some specimens the pale scales adjoining the larger dark elytral patches are almost white. On the legs the clothing is almost entirely ochreous. On the metasternum it is largely sooty, and on the abdomen almost entirely so. On the upper-surface the scales are not closely applied to the derm, but project from same at a slight angle. The sexual differences are but slightly pronounced, as the clothing and punctures of the rostrum are practically identical in both sexes. The female is usually, but not always, somewhat larger than the male. There are three specimens of the species in the British Museum labelled as from Albany (in Western Australia), but the locality is certainly wrong.

Var. A. Three specimens from Marmor (Queensland: H. W. Brown) differ from the type in having sooty scales absent from the under-surface, almost absent from the prothorax, and on each elytron confined to a large sub median spot, and to a smaller subbasal one; but the latter on some specimens is very feeble. The scales on the upper-surface also are distinctly shorter and more closely applied to the derm.

## CATOCALEPHE, Blackb. (25).

The late Rev. T. Blackburn referred this genus to the *Aterpides* with considerable hesitation, and certainly it seems out of place there. In many respects the only known species appears as if it should be referred to the *Psepholar* group of the *Cryptorhynchides*, and to the vicinity of *Therebus* and *Pseudotheribus*. Its front coxæ, however, are almost touching, and this would appear to exclude it from the subfamily altogether. But there is a distinct channel in front of the front coxæ, although it is not acutely margined, neither is the channel acutely margined in *Psepholar* or in *Hybomorphus*; the intercoxal process of its mesosternum is also unusually small for any member of the *Psepholax* group. The sides of the rostrum, the antennæ, and the legs are somewhat as in *Zeneudes*. In *Zeneudes* and *Oreda* each wall of the pectoral canal is supplied at its apex with a tooth-like projection, much as in *C. minans*, but it is placed at a slight distance from the ocular lobe itself. On the whole, I think it should be regarded as an aberrant genus of the *Cryptorhynchides*, and in catalogues should be placed near *Therebus*.

## CATOCALEPHE MINANS, Blackb.

The types of this species are in the South Australian Museum. The male has the rostrum curiously dilated to its apex, and the lower edge of the apex (just behind the mandibles) is supplied with an obtuse tubercle on each side; these are very distinct when the rostrum is viewed from the sides. From some directions the mandibles, when clenched, cause the apex of the rostrum to appear spade-shaped, much as in many species of *Cossonus*. In the female the rostrum is less dilated to its apex, and there are no tubercles on the lower side; the teeth at the apex of the pectoral canal are also smaller.

## AMPAGIA HYSTRICOSA, n. sp.

Dark reddish-brown; antennæ and tarsi paler. Rather densely clothed with dingy greyish-brown scales, but variegated on elytra: with numerous stiff erect scales scattered about.

*Head* with concealed punctures. Rostrum wide, sides distinctly incurved to middle; with dense punctures, distinct at apex but elsewhere concealed. Antennæ stout, inserted in middle of rostrum; scape scarcely half the length of funicle and club combined. *Prothorax* subconical; punctures concealed. *Elytra* closely applied to and outlines continuous with those of prothorax, sides rounded and then diminished to apex; with rows of large concealed punctures.

(25) Trans. Roy. Soc., S.A., 1895, p. 220.

in light but traceable striæ. Basal segment of *abdomen* with dense punctures; and with a large subtriangular space marked off by a ridge on each side, the two ridges meeting at the middle of the apex. *Femora* stout, strongly grooved, hind pair wide and angularly dilated. Length,  $1\frac{1}{2}$ - $1\frac{3}{4}$  mm.

*Hab.*—Queensland: Bundaberg (A. M. Lea). Type, I. 1888.

A minute, strongly convex, elliptic species; readily distinguished from all others of the genus by the stiff erect scales thickly scattered about on the upper-surface, rostrum, and legs. Pascoe, it is true, described *erinucea* as having "squamis nigris opacis validis erectis"; but six specimens of that species before me from King George Sound (the type locality) are not so clothed, the larger scales being all more or less decumbent, certainly nowhere projecting at right angles to the derm. On the elytra there is a feeble spot of dark scales in the scutellar region, and a more distinct one, or fascicle, on the suture about the middle; from the latter a vague, dusky, oblique stripe extends forward halfway towards each side, and there are some whitish scales accentuating the dark ones. The three typical specimens are apparently all males.

#### ALATIDOTASIA RUBRIVENTRIS, Lea.

Three specimens, recently taken at Cairns, probably belong to this species, but they differ from the types in having the under-surface as dark as the upper. The rostrum is shorter, and antennæ stouter, but these may be sexual characters; if so, these are males, and the types are females.

#### ALATIDOTASIA ELLIPTICA, n. sp.

Black, shining; antennæ and claws somewhat reddish. Under-surface and legs with a few white scales, a narrow stripe of white scales on each side near apex of elytra.

*Head* with distinct punctures in front; a distinct impression between eyes. Rostrum rather short, sides distinctly incurved to middle, widest near base, but base itself notched on each side; about base with distinct punctures, elsewhere almost or quite impunctate. Scape stout, inserted slightly nearer apex than base of rostrum, about half the length of funicle and club combined. *Prothorax* strongly transverse; with not very dense and small punctures, becoming somewhat larger on sides. Elytra elongate-cordate, closely applied to and outlines continuous with those of prothorax; with very narrow striæ, containing minute and distant punctures, but a few fairly large ones at base and sides; interstices not separately convex. *Abdomen* with first segment depressed

near base, almost as long as three following combined, with a few distinct punctures, third and fourth each with a distinct row across middle; fifth with dense ones. *Legs* long and rather thin; femora distinctly grooved and lightly dentate; claws minute. Length,  $2\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I 1542

In general appearance extremely close to *rubriventris*, but rostrum stouter, head impressed between eyes, and all the elytral striæ distinct. The emargination of the mesosternal receptacle is also more transverse, and the punctures at sides of prothorax are more distinct. In some lights an extremely fine row of punctures can be traced on each elytral interstice, but from most directions they are quite invisible.

#### ALATIDOTASIA MACROPS, n. sp

Shining dark reddish-castaneous, some parts darker; antennæ paler. Under-surface and legs with sparse white scales; a small spot of white scales on each side of elytra near apex.

*Head* with moderately dense punctures. Eyes large and almost touching in middle. Rostrum moderately stout, sides distinctly incurved to middle, widest near, but notched on each side of base; with rows of rather large punctures, becoming smaller in front. *Scape* stout, inserted nearer base than apex of rostrum, not half the length of funicle and club combined. *Prothorax* moderately transverse; with fairly large but not very dense punctures. *Elytra* elongate-cordate, somewhat wider than, but outlines subcontinuous with those of prothorax; with rows of not very large punctures, in deep striæ; interstices wider than striæ, each with a row of very small punctures. *Abdomen* with first segment scarcely longer than second, second almost as long as third and fourth combined; first and second with dense and coarse punctures, fifth with smaller ones, third and fourth each with one row across middle. *Femora* rather stout, widely grooved, edentate, front pair dilated towards, but suddenly narrowed near base; tibiae narrow, angular at base; claw joint very thin, claws minute. Length, 3 mm.

*Hab.*—Queensland: Cairns district (A. M. Lea). Type, I. 1543.

A somewhat aberrant species, as the femora are edentate, and the large eyes, almost meeting in front, give a very different appearance to the head from that of *rubriventris* or the preceding species. In general appearance it is like some of the small shining species of *Melanterius*. The elytral striæ are narrower than the interstices, and are very sharply defined.

DESCRIPTIONS OF AUSTRALIAN CURCULIONIDÆ, WITH  
NOTES ON PREVIOUSLY DESCRIBED SPECIES.

PART XI.

BY ARTHUR M. LEA, F.E.S.

[Read September 11, 1913]

I am greatly indebted to Mr. Gilbert J. Arrow, of the British Museum, for the opportunity of examining some co-types of Mr. Pascoe's *Curculionidæ*, these enabling me to identify with certainty several genera and species which could not be identified from the descriptions alone, some of these being not alone insufficient but actually misleading. The species sent were:—

*Acacallis personata*  
*Acacallis expletus*  
*Byrsia cerata*.  
*Diethusa ferrida*.  
*Enide astuans*.  
*E. porphyrea*.  
*E. samosa*.  
*Melanterius fugitivus*.  
*Ondistus odiosus*.  
*Paleticus invidus*.  
*Poropterus python*.  
*Tentegia favosa*.

Some notes have also been prepared on other specimens which Mr. Arrow was kind enough to compare with their types.

All the species here noted or described belong to the subfamily *Cryptorhynchides*.

ACACALLIS.

Mr. Pascoe described the apex of the pectoral canal in this genus as open, but in the co-type of *A. personata* before me it is certainly cavernous, and this is a very important feature in the subfamily *Cryptorhynchides*. He also described the base of the prothorax as truncate, but it is distinctly, although rather lightly, trisinate. The rostrum of the female (the sex of the co-type) is almost perfectly straight, but that of the male is lightly curved. I can find nothing warranting its generic separation from *Orochlesis*.



ACACALLIS PERSONATA, Pasc. (now *Orochlesis*).

(*Queenslandica munda*, Lea.)

Deceived by the above-noted discrepancies, I redescribed this species under the name of *Queenslandica munda*. Mr. Pascoe said "the pattern at the base (of the elytra?) has a resemblance to the face of some animal." I cannot see any such resemblance, however, either on the co-type or on four other specimens.

ACALLES EXPLETUS, Pasc. (now *Decilaus*.)

(*Decilaus squamipennis*, Lea.)

The co-type of this species sent for examination certainly belongs to *Decilaus* and to the species subsequently described by me as *D. squamipennis*. The type was possibly somewhat abraded, as Pascoe described the elytra as sulcate-punctate; this is the case, but the punctures are normally so concealed by clothing that they appear to be very small, and many are quite concealed. Nor did Mr. Pascoe mention the dentition of the front femora.

#### BYRSIA.

The co-type of *B. cerata* sent bears a name-label in Mr. Pascoe's own writing. The genus was referred to the *Cryptorhynchides* with doubt, Mr. Pascoe thinking it possibly belonged to the *Erirhinides*; it might, in fact, very well be referred to that subfamily, but as some of its characters denote an approach to *Diethusa*, it may, perhaps, be allowed to remain in the *Cryptorhynchides*.

The pectoral canal is represented by a rather deep and squamose, but not acutely margined, groove in front of the front coxæ; these are lightly but distinctly separated, but the canal between them is not sufficiently wide to allow the rostrum to pass below them. The mesosternum is longer than usual, with the middle coxæ at its hind margin, so that they are rather more distant from the front pair than is usual, and they are rather more widely separated than that pair. The mesosternum between them is not in the form of a special receptacle, but slopes up till it joins in with the metasternum. The suture between the two basal segments of abdomen is certainly not obsolete in the middle (as described), but possibly on the type the clothing was matted together there. The eyes are coarsely faceted.

#### BYRSIA CERATA, Pasc.

The co-type is a male, its under-surface is densely clothed with silvery scales, the two basal segments of its abdomen are conjointly concave, with the depression traceable on to the metasternum. The basal third of the rostrum is squamose,

elsewhere shining and with distinct punctures, having a tendency to become confluent posteriorly.

The locality given by Mr. Pascoe was simply Queensland; but a male in my collection (from the Macleay Museum) is labelled as from Rockhampton. A female (also from Rockhampton) in the British Museum differs from the male in being slightly stouter, rostrum thinner and clothed only at extreme base, and basal segments of abdomen gently convex.

#### DIETHUSA

Two co-types of *D. fervida* were sent, and one bears a name-label in Mr. Pascoe's writing.

I cannot see that any of the tibiae are bicalcarate at apex, the supposed inner spurs are simply tufts of hairs in the usual position. Probably on the type these tufts were cemented together, and so appeared as mucros. There are certainly, however, several species of *Diethusa* and *Melanterius*, whose front tibiae are bicalcarate at apex. Other characters relied upon to distinguish the genus from *Lybæba* and *Enide* were the subulation of the rostrum and abdominal sutures, but these are of specific importance only.<sup>(1)</sup> Previously I united *Enide* and *Lybæba*, and now propose that these be merged in *Diethusa*, that name having priority of pagination.<sup>(2)</sup>

#### DIETHUSA FERVIDA, Pasc.

(*Lybæba acuticosta*, Lea.)

One of the co-types is labelled South Australia, the other Gawler. They are evidently sexes, in the male the antennæ are inserted nearer the apex of the rostrum than in the female, and the rostrum itself is wider and less subulate in front of same, although distinctly narrowed to the apex. Mr. Pascoe described the general colour as black, and the rostrum as brownish-ferruginous or ferruginous; the co-types have the rostrum blackish, with the apical fifth in the male and the apical fourth in the female reddish. I have redescribed the male of the species under the name of *Lybæba acuticosta*, but the form described as the female of *L. acuticosta* was wrongly referred to that species, and really belongs to *D. metasternalis*.

#### ENIDE ÆSTUANS, Pasc. (now *Diethusa*).

Four co-types sent, one bearing a name-label in Mr. Pascoe's writing. They agree with the species I redescribed as such.<sup>(3)</sup>

(1) Proc. Linn. Soc., N.S.W., 1899, pp. 250-251.

(2) Ann. & Mag. Nat. Hist., March, 1873: *Diethusa*, p. 185; *Lybæba*, p. 186; *Enide*, p. 187.

(3) Proc. Linn. Soc., N.S.W., 1899, p. 253.

ENIDE PORPHYREA, Pasc. (now *Diethusa*)

Two co-types sent, one bearing a name label in Mr Pascoe's writing. They agree with the species I redescribed as such.<sup>(4)</sup>

ENIDE SANIOSA, Pasc. (now *Diethusa subfasciata*, Pasc., var.).

A somewhat abraded specimen sent as a co-type of *E. saniosa*. I cannot regard it as more than a slight variety of the common, widely distributed and variable *subfasciata*.

## MELANTERIUS FUGITIVUS, Pasc.

The co-type of this species sent for examination is certainly different to any species previously seen by me. It is a fairly large species, its upper-surface densely but not quite uniformly clothed with somewhat golden scales, the under-surface with paler and thinner scales, not quite as dense as on the upper-surface, but certainly not "sparse" (as described). The combined length of the third and fourth abdominal segments is just perceptibly more than that of the second, but distinctly more than that of the fifth. The femoral dentition is strong. The punctures of the metasternal episterna are moderately dense at base and apex, but in a single series along the middle. In my table of the genus<sup>(5)</sup> it would be associated with *uniseriatus*, which is a much smaller species, with very different clothing, etc.

## ONIDISTUS ODIOSUS, Pasc.

The specimen sent as a co-type of this species bears a label "K. G. S.," on which are some marks that probably were intended for (?). It is simply a small specimen of *araneus*, and the locality—King George Sound—is certainly incorrect. *O. araneus* is a common species in the coastal scrubs of Northern New South Wales and of Southern Queensland.

PALETICUS INVIDUS, Pasc. (now *Euryporopterus*).(*Euryporopterus angularis*, Lea.)

A co-type of *P. invidus* was sent with another specimen, both labelled as from Queensland and as from Pascoe's collection. The description is somewhat misleading, as the third, fifth, and seventh interstices of elytra are described as elevated, especially posteriorly, whereas the elytra are without interstices in the accepted sense, the elevations mentioned being really due to fascicles or clusters of scales; the position

(4) *L. c.*, p. 252.

(5) *L. c.*, p. 206.

of the seventh interstice is occupied by a strong epipleural fold. The species belongs to *Euryporopterus*, and was subsequently described by me as *E. angularis*.

POROPTERUS PYTHON, Pasc.

(*P. listroderes*, Lea).

The co-type of *P. python* sent belongs to the species I subsequently described as *P. listroderes*. Mr Pascoe's description is rather faulty, and before seeing the co-type I was under the impression that the species was not really a *Poropterus*.

TENTEGIA FAVOSA, Pasc.

A specimen sent as a co-type of this species, from Mr. Pascoe's collection, is labelled Australia; the type was stated to be from Western Australia. But as the specimen now before me has the front and hind femora moderately, and the middle pair rather strongly dentate, and in the original description the femora are noted as edentate, it is probable that the specimen really belongs to a species closely resembling, but not, *favosa*, although associated with the type by Mr Pascoe<sup>(51)</sup>. There are two species in my collection resembling the supposititious co-type; *anolpa* with prothoracic punctures identical and elytral granules very similar, but with shoulders clasping the prothorax and femora edentate; and *quadriseriata* also with similar punctures on the prothorax, but that segment carinated.

PERISSOPS ILIACUS, Pasc. (now *Critomerus*).

(*Critomerus emblematicus*, Lea.)

Mr. Pascoe said the type of *Perissops* was the *Enteles ocellatus* of Redtenbacher; and in naming the genus he referred two additional species to it—*mucidus* (a common weevil in the coastal forests of Northern New South Wales and of Southern Queensland) and *iliacus* (from Gilolo, Aru, etc.). As a generic feature he described the front femora as "obsolete dentata, vel dente parvo instructa." Whilst of *iliacus* he wrote "femoribus, praesertim anticis, dente acuto instructis."

Dr. Gestro sent me four Yule Island specimens as *P. iliaca*,<sup>(6)</sup> but their front femora are bidentate; as they were not from any of the type localities, and belong to the species I named *Critomerus emblematicus*, I sent two of them to Mr.

(51) Since this was written Mr. Arrow has informed me that the specimen sent is really not *favosa*, although extremely close to it in general appearance.

(6) In Ann. Mus. Civ. Gen., 1885, p. 269, the species was recorded as from Yule Island, and given a feminine termination.

Arrow for his opinion, pointing out that their front femora were quite conspicuously bidentate.<sup>(7)</sup> In reply he wrote: 'I have carefully compared your specimens with Pascoe's type of *Perissops iliacus*, and am satisfied that they belong to that species. Pascoe's collection contains five specimens, varying a good deal in pattern, and the one he has marked 'type' (from Gilolo) has the prothorax almost entirely white, but I think there is no doubt all are the same.' Although the species *emblematicus* must now be regarded as synonymous with *iliacus*, the generic name *Critomerus* must be retained, as the conspicuously bidentate femora are strongly at variance with all the (now numerous) known species of *Perissops*.

#### MECHISTOCERUS.

##### *Berosiris*.

Dr. Gestro sent me three specimens as co-types of *B. calidris*, but as they were from Yule Island, and that locality was not mentioned under the original description I thought it desirable to have them compared with the type, and sent them to Mr. Arrow with a note as follows: "I would specially draw your attention to the walls of the pectoral canal, almost attached to the hind margin of the front coxæ you will notice ridges margining the canal (a feature that denotes the species is a *Mechistocerus*). These ridges are, however, easily overlooked, if the specimen is pinned in the ordinary way. If *B. calidris* (type) has these processes, possibly others of that genus have, in which case possibly the name should be treated as synonymous with *Mechistocerus*. The genus *Berosiris* was originally described in the Journal of the Linnean Society,<sup>(8)</sup> and five species were then named. As *picticollis* was figured<sup>(9)</sup> and the first named, apparently it should be regarded as the type; and I would therefore be glad to know if its pectoral canal is as in the specimens sent, especially as to the processes just behind the front coxæ."

In reply Mr. Arrow wrote: "I have examined the type of *Berosiris calidris*, and although your specimens cannot be regarded as co-types, I think they are probably the same. Pascoe had specimens from Yule Island, but left them unnamed and separated widely from *B. calidris*. The form of the pectoral canal is exactly the same in all species of *Berosiris* (including *B. picticollis*) as in your specimens, and Mr. Marshall tells me that *Berosiris* and *Mechistocerus* have long been

(7) The second tooth is midway between the first and the base of the femur; in several species of the genus there is a small supplementary tooth in the femoral emargination.

(8) Zool., xii., 1873, p. 43.

(9) Pl. i., fig. 9.

regarded as synonymous, and he believes were announced to be so by Faust.<sup>(10)</sup> From two specimens of *M. compositus* (Lea) received from you, I think it most likely that that is a synonym of *B. calidris*."

BEROSIRIS CALIDRIS, Pasc. (now *Mechistocerus*).

*Mechistocerus compositus*, Lea.

*M. compositus*, Faust (?).

This is a very variable species, and is common in many parts of Northern Queensland and New Guinea. I redescribed it under the name of *compositus* in 1907.<sup>(11)</sup> Subsequently<sup>(12)</sup> the late Herr J. Faust also named a species *compositus*, and quite probably his species is the same as *calidris*; the description is but little more than a comparison with *M. nigrostriatus*.

DYSTROPICUS.<sup>(13)</sup>

(*Berosiris*, Lea, in error.)<sup>(14)</sup>

I received from Dr. Gestro seven specimens as co-types of *Dystropicus squalidus*, and as coming from the type locality (Yule Island). They agree fairly well with the generic and specific descriptions, but differ in the rostrum being decidedly long, certainly not "modice elongatum" and the second joint of the funicle at most twice the length of the first, certainly not "triplo." These discrepancies, however, are but on a par with others in Pascoe's descriptions, and I believe the specimens to be correctly named.

Deceived by these and other inaccuracies I redescribed the genus as the *Berosiris* of Pascoe. *Dystropicus* was referred to another section (*Sophrorhynchinae*) of the subfamily, to the one (*Cryptorhynchinae*) in which he placed *Berosiris*.

DYSTROPICUS SQUALIDUS, Pasc.<sup>(15)</sup>

*Berosiris mixtus*, Lea.

The types of *B. mixtus* agree with the co-types above noted of *D. squalidus*.

BEROSIRIS TANYRHYNCHUS, Lea (now *Dystropicus*).

This species must now be transferred to *Dystropicus*.

(10) Stett. Ent. Zeit., liii., p. 46. I have not seen the reference, however.

(11) Proc. Linn. Soc., N.S.W., p. 409.

(12) Stett. Ent. Zeit., 1898, p. 143.

(13) Pascoe, Ann. Mus. Civ. Gen., 1885, p. 252.

(14) Proc. Linn. Soc., N.S.W., 1907, p. 415.

(15) Pascoe, Ann. Mus. Civ. Gen., 1885, p. 252.

## MELANTERIUS LAMELLATUS, n. sp.

♂ Black; rostrum, antennæ, and tarsi of a dingy-red. Densely clothed with stout sooty scales, variegated with whitish spots.

*Eyes* very coarsely faceted and widely separated. Rostrum long, thin, and moderately curved, basal half with a median carina; basal third with coarse concealed punctures, elsewhere with smaller clearly-defined ones. Scape thin, somewhat shorter than funicle, inserted two-fifths from apex of rostrum; first joint of funicle slightly longer than second. *Prothorax* moderately transverse; with dense, normally almost-concealed punctures; with a feeble remnant of a median line. *Elytra* rather long, decidedly wider than prothorax, parallel-sided to near apex; with rows of rather large but normally almost (or quite) concealed punctures, in distinct striæ; alternate interstices strongly elevated. *Under-surface* with dense and rather coarse punctures; but a single row in middle of each of the metasternal episterna. Basal segment of *abdomen* flattened in middle, apical with a transverse impression. Four hind *femora* each with a small but acute tooth, the others with a still more minute one. Length,  $5\frac{3}{4}$ - $6\frac{1}{4}$  mm.

♀. Differs in having the rostrum with smaller punctures and antennæ inserted not quite so close to apex.

*Hab.*—Queensland: Dalby (Mrs. F. H. Hobler).

The individual scales are wide, and give the surface a somewhat plated appearance; on the under-surface they vary from mostly white to mostly sooty.

This and the two following species (and there are at least two other undescribed species of the same group) might have been referred to a new genus rather than to *Melanterius*; and two of them in fact have the tip of the rostrum not continued beyond the mesosternum, and this, in my table of the genera allied to *Melanterius*,<sup>(16)</sup> would appear to denote that (as the eyes are coarsely faceted) they belonged to *Psydestis*, or to a new genus; but in one of them the rostrum does pass the mesosternum, and the species are so obviously allied (in fact at first they appear to belong to but one species) that it would be absurd to generically separate them. They are less compact than the species of *Diethusa*, and the second abdominal segment is rather large. In many species of *Diethusa* some of the alternate interstices of the elytra are elevated, but usually the elevation is of the nature of a ridge or carina, and is shining. In these species the elevation consists of the whole

width of the interstice. The clothing is denser than on other species of *Melanterius*. The punctures of the under-surface are practically the same on all three species.

On the present species the sutural interstice is strongly elevated from the middle to the apex, the third is similarly elevated from before the middle to the apex, the fifth is elevated for a less distance, and the elevated part suddenly terminates some distance from the apex; the seventh is also elevated for part of its length. On the basal third the interstices are all much alike. The tooth on each of the front femora is so minute that it is quite invisible from most directions; on the others it is also small, but being equilaterally triangular is moderately distinct. The mesosternal receptacle is so strongly concave as to leave the middle coxæ exposed, but the front margins curve round the coxæ, and from the sides appear as short processes behind them.

On *nemorhinus* the interstices are only moderately elevated, and the elevated parts are confined to the posterior declivity, instead of commencing some distance before same. The tooth on each hind femur is very strong and acute, on the others it is quite distinct, although smaller. The mesosternal receptacle is much shallower and much smaller than in *lamellatus*, and curves less around the middle coxæ. Its rostrum is longer and straighter than in *lamellatus* and *leucophæus*.

On *leucophæus* the elevated parts of the interstices commence much as on *lamellatus*, but are somewhat less strongly elevated, although more so than on *nemorhinus*, and the sutural interstice, although elevated above the second, is not as strong posteriorly as is the third, whereas on *lamellatus* it is quite as strong. The tooth on each front femur is small but distinct, on the middle pair it is acute and fairly large, on the hind pair large and acute (larger than on *nemorhinus*). The mesosternal receptacle is intermediate between that of *lamellatus* and *nemorhinus*.

#### MELANTERIUS NEMORHINUS, n. sp.

Colour and clothing much as in preceding species.

*Rostrum* long, thin, and almost straight, with clearly-defined punctures, becoming linear in arrangement towards, and concealed about, base. *Scape* as long as funicle, inserted two-fifths from apex of rostrum; first joint of funicle distinctly longer than second. *Prothorax* without trace of a median carina. *Elytra* not much wider than prothorax, but sides and punctures much as in preceding species. Length. 4½-5 mm.

*Hab.*—Queensland: Dalby (Mrs. F. H. Hobler).



## MELANTERIUS LEUCOPHÆUS, n. sp.

Colour and clothing much as in the preceding species, but scales of under-surface and legs almost uniformly whitish.

*Eyes*, rostrum, and antennæ much as in that species. *Prothorax* without trace of a median carina. *Elytra* much the same, but alternate interstices less conspicuously elevated and seriate punctures somewhat larger. Length, 5 mm.

*Hab.*—New South Wales: Blue Mountains (E. W. Ferguson).

There is an allied species from Rockhampton in the Hamburg Museum, but its alternate interstices are more strongly elevated, abdominal clothing much denser, and hind femora edentate, instead of with a very strong tooth as in the present species.

## MELANTERIUS LATICORNIS, n. sp.

Black; rostrum, antennæ, and legs of a dingy-red. Upper-surface almost glabrous; under-surface and legs rather sparsely setose, the setæ stouter on metasternum and denser on legs than elsewhere.

*Eyes* widely separated on upper-surface, almost touching on under. Rostrum moderately long and not very thin, subgibbous at base; punctures crowded in front of antennæ, but in linear arrangement behind same. Antennæ rather stout; scape inserted one-third from apex of rostrum and the length of funicle; first joint of funicle longer than second, the others regularly increasing in width, club subcontinuous with funicle. *Prothorax* almost as long as wide; with dense and rather large and deep, clearly-defined punctures. *Elytra* rather long, sides very feebly rounded, base rather lightly trisinate; with rows of large suboblong punctures, becoming small posteriorly; interstices rather acutely ridged posteriorly, the lateral ones towards the base as well, but the sutural one nowhere ridged, each with a feeble row of rather small punctures. *Metasternum* with dense and rather coarse punctures; episterna unusually narrow. Basal segment of *abdomen* gently concave in middle; punctures sparser than on metasternum, but quite as large. *Femora* moderately stout, rather lightly dentate. Length,  $3\frac{1}{2}$ - $3\frac{3}{4}$  mm.

*Hab.*—Tasmania: Hobart (A. M. Lea): New South Wales (Macleay Museum): Blue Mountains (E. W. Ferguson).

The funicle is really seven-jointed, but the joints so increase in width, and are so close together that a compound power is necessary to enable their number to be counted. The rostrum is fairly long, but stouter and more rounded than usual: from the side its base appears to be separated from the head by a feeble notch. Seen from below the scrobes appear

to be deep and to meet in the middle at the exact base of the rostrum, on its lower-surface. The prothoracic punctures are all sharply defined, and no two are really confluent; but as the interspaces between some of them are in very feeble ridges, they have the appearance of being feebly confluent. In *antennalis*, also with stout antennæ (and with which it would be associated in my table), the club is distinctly separated from the funicle, instead of being apparently continuous with it. It differs also in many other respects, but notably in width, size of punctures, and base of rostrum. The eyes almost meet on the lower-surface, as in *Neomelanterius*, but as the rostrum is not of great length, it appears better to refer the species to *Melanterius*. The (three) typical specimens are probably all males.

MELANTERIUS MINOR, n. sp.

Blackish-brown: rostrum, antennæ, and legs somewhat paler. Elytra with minute white setæ, forming a feeble row on each side of each interstice; under-surface and legs with fairly numerous whitish setæ.

Eyes separated less than width of base of rostrum. Rostrum rather long and thin: with dense punctures, becoming linear in arrangement behind antennæ, and with a narrow median carina. Scape inserted about two-fifths from apex of rostrum and almost the length of funicle; first joint of funicle longer than second. Prothorax almost as long as wide, apex not much narrower than base: with dense, moderately large, clearly-defined punctures. Elytra oblong-cordate, sides parallel on basal half: with rows of suboblong punctures in rather narrow striæ; interstices wider than striæ, with feeble ridges, becoming acute posteriorly, each with a feeble row of punctures on each side, sutural interstice with a single irregular row of punctures and feebly ridged only on posterior declivity. Basal segment of abdomen flat in middle. Femora moderately dentate. Length,  $2\frac{3}{4}$  mm.

Hab.—New South Wales: Sydney (A. J. Coates).

In some respects close to *antennalis*, but smaller, narrower, and with the second elytral interstice non-carinate on the basal half. In shape it is something like the preceding, but that species is larger, with very different punctures, rostrum, and eyes. It is the smallest of the genus, except *castaneus*, which is much more robust and otherwise different.

MELANTERIUS CONFUSUS, n. sp.

Blackish-brown: antennæ and tarsi of a dingy-red. Upper-surface almost glabrous: under-surface with rather sparse whitish setæ, becoming denser on apical segment and on legs.

*Eyes* rather close together; a deep fovea between them. Rostrum moderately long, with clearly-defined punctures in front, becoming linear in arrangement, and leaving three feeble carina behind antennæ. Scape inserted about two-fifths from apex of rostrum, somewhat shorter than funicle; basal joint of funicle longer than second. *Prothorax* with moderately dense and clearly-defined but rather small punctures. *Elytra* cordate, shoulders and sides rather strongly rounded, base not trisinate; with rows of moderately large wrinkled punctures, in deep striæ: interstices ridged along middle, except about base, the sutural one only posteriorly, with dense rugose punctures. *Metasternum* with sparser punctures than usual. Basal segment of *abdomen* rather lightly depressed in middle. *Femora* stout, rather strongly dentate. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns (E. Allen).

In many respects close to *persimilis*, but all the interstices with dense and confused punctures not (except those in the striæ) in series. In my table the punctures would also distinguish it from *cordipennis*, which, moreover, is a considerably paler species. The second abdominal segment is rather shorter than is usual in the genus, being distinctly shorter than the two following combined.

#### MELANTERIUS ELLIPTICUS, n. sp.

♀. Blackish-brown; antennæ and tarsi paler. *Elytra* with very minute setæ, prothorax with a seta in each puncture: legs with rather dense white setæ, the under-surface more sparsely clothed.

*Eyes* widely separated. Rostrum rather long and thin; with rather dense punctures in front, becoming linear in arrangement behind antennæ, but leaving an impunctate median line from same to base. Scape thin, inserted one-third from apex of rostrum and the length of funicle; first joint of funicle distinctly longer than second. *Prothorax* not much wider than long, sides obliquely decreasing in width to apex; with dense clearly-defined punctures of moderate size, becoming small about apex. *Elytra* closely applied to, and base no wider than prothorax, sides rather strongly rounded; with rows of large oblong punctures, becoming smaller posteriorly; interstices acutely ridged on apical half, the lateral ones almost to base, with sparse and minute punctures. Basal segment of *abdomen* flat in middle; third and fourth each with a single row of setiferous punctures across middle. *Femora* stout, strongly dentate; four front tibiæ each with hook starting near summit of apical slope. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns (E. Allen).

An elliptic species with the outlines of prothorax and elytra continuous. The prothorax is narrower than in *semiparvus*, its punctures rather denser, and conspicuously different in size at base and apex, and elytral interstices more convex. In general appearance close to *rufimanus*, but punctures of second abdominal segment distinctly larger, and third and fourth each with a conspicuous row; the teeth of the front femora also are no larger (if as large) as those of the middle pair, whereas on that species they are distinctly larger. In this, as in many other species of the genus, the seriate punctures on the elytra, although rather large, are not sharply defined, and appear more as dilated portions of the striæ rather than as isolated punctures.

MELANTERIUS MEDIOCRIS, n. sp

Blackish-brown: antennæ and claw joint of a dingy-red. Elytra with a row of minute setæ on each side of each interstice; under-surface and legs with distinct white setæ.

*Eyes* close together. *Rostrum* rather long and thin; with dense punctures, becoming linear in arrangement behind antennæ. *Scape* inserted about three-sevenths from apex of rostrum, distinctly shorter than funicle; first joint of funicle longer than second. *Prothorax* moderately transverse, sides strongly rounded; punctures much as on preceding species. *Elytra* cordate, shoulders and sides strongly rounded; with series of large somewhat distant punctures, becoming smaller posteriorly, interstices acutely carinated, but not to extreme base, the sutural one only posteriorly, the next three rather feebly on basal third; each with a somewhat irregular row of small punctures on each side of each ridge. *Metasternum* and basal segment of *abdomen*, and part of second segment, with dense and rather coarse punctures; basal segment gently convex in middle. *Femora* stout, strongly dentate, and each with a granule in emargination. Length, 5 mm.

*Hab* —Queensland: Cairns (E Allen).

In general appearance somewhat close to *strabonis*, but larger, second interstice not quite the same and femoral dentition less strong. Also close to *confusus*, but suture and dentition different. Also like large specimens of *persimilis*, but the interstices differently granulate; in that species the interstices have, on their outer sides, a granule placed at about the middle of the side of each of the large seriate punctures or foveæ, but there are no granules on the inner sides of the interstices. On the present species there are granules on both sides. On the preceding species there are a few granules on the outer sides of the interstices, but their places are usually marked by slight median extensions of the foveæ. The elytra,

although closely applied to the prothorax, are decidedly wider near the base, so that the outlines are not continuous with those of the prothorax as in the preceding species. The type appears to be a female. Another specimen, evidently also a female, may represent a variety; it differs in having the femora less strongly dentate and without a granule in the emargination.

MELANTERIUS MÆSTUS, n. sp.

♂. Black; rostrum, antennæ, legs, and tip of prothorax and of elytra reddish. Elytra with a row of small but distinct setæ on each side of each interstice; prothorax, under-surface, and legs moderately clothed.

*Eyes* separated almost the width of rostrum at base. Rostrum long and thin, punctures linear in arrangement behind antennæ, and leaving a median carina. Scape thin, inserted one-third from apex of rostrum, the length of funicle; first joint of funicle as long as second and third combined. *Prothorax* rather strongly transverse; with dense and rather small punctures. *Elytra* elongate-cordate, base trisinate, sides moderately rounded; with rather distant punctures, in deep narrow striæ; interstices ridged along middle, the first only on posterior declivity, the second to fourth from near middle, the others almost to base, with dense punctures almost as large as those on prothorax but less regular. Basal segment of *abdomen* somewhat flattened in middle. *Femora* rather stout, moderately dentate. Length,  $3\frac{1}{2}$ - $3\frac{3}{4}$  mm.

♀. Differs in having the body parts not quite black, the rostrum thinner and slightly longer, with smaller and sparser punctures, less linear in arrangement, and antennæ inserted nearer middle; basal segment of abdomen evenly convex, and tibial hooks stronger.

*Hab.*—Queensland: Cunnamulla (H. Hardcastle).

In general appearance extremely close to *acacia*, but second and third interstices of elytra not at all carinate on basal third, punctures of under-surface larger, and the scales in same smaller, rostrum thinner in both sexes, and spur of four front tibiæ of female commencing halfway down the apical slope, instead of at summit of same. In my table would be associated with *interstitialis*, *incomptus*, and *tristis*; from *incomptus* distinguished by its considerably narrower form, from the others by its distinctly narrower and longer rostrum, and thinner antennæ. The female has a moderately distinct smooth median line on the prothorax, but on the male it is scarcely traceable.

Another male from Cunnamulla differs from the type in having the clothing of the prothorax and under-surface distinctly longer, that of the former distinctly rising above the

general level, which it does not do on the type. But as I can find no other distinctions it appears desirable to regard it as a variety rather than as a distinct species.

MELANTERIUS IMITATOR, n. sp.

♂. Black; tip of prothorax, antennæ, and legs red. Elytra with a fairly distinct row of setæ on each side of each interstice; prothoracic clothing not rising to general level, under-surface and legs moderately clothed.

*Eyes* moderately separated. Rostrum long and thin; with dense punctures, becoming coarser towards base, but scarcely linear in arrangement. Scape inserted three-sevenths from apex of rostrum, decidedly shorter than funicle; first joint of funicle as long as second and third combined. *Prothorax* rather strongly transverse; with dense clearly-defined punctures of moderate size. *Elytra* oblong-cordate, sides rather feebly rounded, base lightly trisinate; with rows of rather large distant punctures; interstices acutely ridged, the first only on posterior declivity, the second not on basal sixth, the others almost to extreme base, but the fourth and sixth less acutely than the adjacent ones; each with two somewhat irregular rows of somewhat coarse punctures, becoming smaller and more regular posteriorly. *Abdomen* with rather dense punctures, rather sparser and larger on intercoxal process (which is depressed) than elsewhere. *Femora* stout, hind ones moderately, the others lightly dentate. Length, 3 mm.

*Hab.*—South Australia (H. Hacker).

In my table would be associated with *vulgivagus*, to which species, in fact, it bears a rather close resemblance; but it is distinguished therefrom by the much less conspicuous dentition; the front femora from most directions appear to be edentate, and the tooth even when visible is seen to be extremely small. The eyes are decidedly closer together than in *acucia*, or in *solitus*, to which latter species the elytral clothing might suggest affinity.

MELANTERIUS FASCICULATUS, n. sp.

Almost or quite black; antennæ and tarsi of a dingy-red. Upper-surface with minute setæ, under-surface and legs with distinct whitish setæ, the four hind trochanters each with a conspicuous fascicle of long golden setæ.

*Eyes* moderately separated. Rostrum moderately long and thin; with rather coarse punctures, becoming linear in arrangement behind antennæ, but not leaving distinct carinæ. Scape inserted about one-third from apex of rostrum, almost the length of funicle; first joint of funicle distinctly longer than second. *Prothorax* moderately transverse, sides strongly

rounded; punctures dense, clearly defined, and not very large. *Elytra* elongate-cordate, sides moderately rounded; with rows of large suboblong punctures, becoming smaller posteriorly; interstices acutely ridged for most of their lengths, but the first only on posterior declivity, with a row of distinct punctures on each side of each ridge. *Venter* with dense and coarse punctures; basal segment of abdomen depressed in middle of base, apical segment with a wide, shallow impression. *Femora* stout, strongly dentate. Length, 4 mm.

*Hab.*—Queensland: Townsville (H. H. D. Griffith from F. P. Dodd).

A black species of medium size but readily distinguished by the conspicuous fascicles on the trochanters: these, however, may be sexual, as both the specimens before me appear to be males. The front trochanters have each one strong seta, and a similar seta is on each side of the subapical abdominal impression.

#### MELANTERIUS LEGITIMUS, Lea.

Two specimens from Mount Wellington<sup>(17)</sup> probably belong to this species, but differ from the type in having the basal two-thirds of the rostrum tricarinate. On the type the punctures are more or less in rows, but, except for the median carina, the spaces separating the rows are not distinctly carinated.

#### MELANTERIUS CONGRUUS, Lea.

This species has the second abdominal segment fairly large in comparison with most species of *Diethusa*, and the femora feebly grooved, and so was referred to *Melanterius*, despite the density of its clothing. The type is a male, and its front tibiae are rather strongly curved, the apical spur is of normal appearance, but behind it the apex of the tibia has two ridges (converging to the spur), between which the tarsus is placed. The hind tibiae are bisinuate, but the apical sinus is short, so that from some directions it appears almost like a notch, the apical spur is stouter and larger than usual, and has a small supplementary tooth or granule on one of its faces. From some directions the basal segment of abdomen appears to have a large depression, of such a shape that its middle runs out narrowly to the apex of the segment. A second male agrees in size and in all structural details with the type, but the base of its elytra has indistinct spots of brownish scales, and about the middle there are some faint whitish spots.

A small (2½ mm.) male from Sydney has the front tibiae rather more strongly curved, with a stronger spur, the hind

(17) Now first recorded for Tasmania.

tibiæ have also stronger spurs and the apical notch is more pronounced. But the abdominal depression is shallower, and does not run out to a point. The clothing is much as on the type.

Another male (3 mm.) has a conspicuous but irregular patch of dark scales at the base of the elytra, and some obscure spots about the middle. A female (the only one known to me) associated with it has identical markings, but differs in having the rostrum somewhat longer and thinner, with punctures of moderate size only at the extreme base (where they are partly concealed), antennæ inserted nearer base than apex of rostrum, front and hind tibiæ normal, and basal segment of abdomen rather strongly convex.

#### MELANTERIUS MACULATUS, Lea.

A specimen from Tasmania differs from the normal form in having the derm of the prothorax and elytra entirely black, instead of a rather dark-brown.

#### MELANTERIUS CONSPICIENDUS, Lea.

A specimen from Brisbane is evidently a female of this species. It differs from the type, evidently a male, in being slightly smaller; rostrum longer and thinner, with less evident rows of punctures; antennæ inserted not quite so close to apex of rostrum; and basal segment of abdomen convex, instead of depressed, in middle.

#### MELANTERIUS AMPLIPENNIS, Lea (now *Diethusa*).

The type of this species is a female; it differs from the female of *Diethusa amplicornis* in being smaller and with a considerably longer rostrum. A male of the species has recently been taken at Gosford, and it is undoubtedly extremely close to the male of *D. amplicornis*, but differs in being much smaller (3½ mm. only), with the two apical joints of funicle and the club rather narrower (but still much larger than usual), the legs shorter and stouter, the hind tibiæ more strongly bisinuate, with the apical sinus decidedly shorter and deeper, appearing much like a notch; the middle tibiæ are also distinctly bisinuate instead of arched. The second abdominal segment, however, is slightly shorter than the third, and its sides clasp the sides of that segment exactly as in the male of *D. amplicornis*.

The two species are certainly congeneric, but the differences in the legs of the males and rostra of the females convince me that they are not conspecific, despite the same peculiar antennæ and abdomen. As the main distinction between



*Melanterius* and *Diethusa* lies in the second abdominal segment, and that segment cannot be used for the two species now under consideration: and as the clothing is so dense that the derm is partly hidden, it appears desirable to regard them both as belonging to *Diethusa*.

#### DIETHUSA

This genus is unsatisfactorily close to *Melanterius*. Nevertheless, as each is now known to contain many species (*Diethusa* 24, *Melanterius* 45: numbers that will probably be more than doubled), most of which are easily referable to one or the other, it appears desirable to maintain them. The principal features relied upon to distinguish them are the grooving of the femora and the size of the second abdominal segment. Owing to the clothing, however, it is often difficult to decide as to whether a femur is grooved or not. The size of the second segment, however, is readily seen, but this is a character that sometimes must be treated in an arbitrary manner, and in two species at least (*Diethusa amplicornis* and *Melanterius amplipennis*) is sexually very different. On the whole, however, it appears desirable to refer all the wide, densely-clothed species with the second segment short to *Diethusa*. In all the species that have been referred to that genus the clothing is dense, and in the majority of species now standing under *Melanterius* it is much less dense, sometimes almost absent, at anyrate on the pronotum, where each puncture contains but one scale; that usually is depressed below the general level. There are, however, three exceptions to this, *viz.*, *floridus*, *congruus*, and *amplipennis*, all of which are commented upon. The peculiar armature of the four front tibiæ of some species of *Diethusa* is not a generic feature: in the females of some species the spur, or tooth, commences at the extreme upper end of the dilated apex of the tibiæ, and slightly diverges from the oblique apex; in others it commences half-way down, but in the majority it is terminal, as in the males.

#### DIETHUSA APICALIS, n. sp.

Reddish-castaneous; prothorax in parts somewhat infuscate. Densely clothed with stiff scales, varying from stramineous to ochreous, but uniformly pale on under-surface; elytra with a few feeble sooty spots.

*Rostrum* long, thin, and almost parallel-sided: with an impunctate median line from base to apex, with punctures in rows behind antennæ. Scape inserted in middle of rostrum, distinctly shorter than funicle; first joint of funicle slightly shorter than second. *Prothorax* rather lightly transverse;

with dense punctures. *Elytra* subcordate, base strongly trisinate; with rows of suboblong punctures, in narrow, deep striae; interstices rather wide, nowhere ridged. Basal segment of *abdomen* obliquely flattened in middle, apical segment with a wide, shallow impression. *Femora* rather stout, hind ones moderately, the others very feebly, dentate; front tibiae bicalcarate at apex, hind pair with apical hook dentate. Length,  $3\frac{1}{2}$  mm.

*Hab* —Victoria (National Museum)

The clothing is denser and less decumbent than in other species of the genus. The front tibiae are moderately curved at apex, and the apex itself is bicalcarate; the spurs are of uneven size, but start from a common base. The spur of the hind tibiae has a distinct triangular tooth, that from some directions appears to be almost as large as the spur itself. The teeth of the four front femora are invisible from most directions. The type is probably a male

#### DIETHUSA SULFUREA, n. sp.

Reddish-castaneous. Densely clothed with sulphur-coloured scales, in places with a golden-lustre: paler (but scarcely white) on under-surface and legs.

*Rostrum* not very long, parallel-sided to insertion of antennae, thence narrowed to apex; with dense punctures concealed near base. Scape stout, inserted two-fifths from apex of rostrum, distinctly shorter than funicle. first joint of funicle as long as second and third combined, third to seventh transverse. *Prothorax* moderately transverse, punctures normally quite concealed. *Elytra* subcordate, base moderately trisinate; with rows of partially-concealed punctures, in narrow striae; interstices irregular, but nowhere ridged. Basal segment of *abdomen* gently concave in middle, apical with a wide impression. *Femora* moderately stout, edentate; tibiae with apical spurs minute. Length,  $3\frac{1}{2}$  mm.

*Hab*.—Queensland: Cunnamulla (H. Hardcastle).

Readily distinguished from others of the genus by the inequalities of the elytra and the sulphur-coloured clothing. The elytra are nowhere supplied with distinct tubercles, but have numerous slight swellings, giving the surface an uneven appearance; the second interstice is rather suddenly dilated about the base, the third is narrowest at the base, and widest close to same. The punctures in the striae are probably of fairly large size, although appearing rather small; but the species being a very distinct one, and the type unique, the derm has not been abraded to expose their full size.

LYBÆBA AMPLICORNIS, Lea (now *Diethusa*).

The types of this species are males. Two females from the Victorian Alps appear to belong to the species. They differ from the types in being slightly larger, rostrum thinner and fully the length of prothorax, with smaller and less crowded punctures, antennæ inserted rather more distant from apex of rostrum, two apical joints of funicle and the club distinctly narrower (although of larger size than usual), four front tibiæ each more dilated at apex, with a narrow tooth or spine commencing at the upper apex and slightly diverging from the oblique line of apex (much as in the females of *M. floridus* and *D. blackburni*); second segment of abdomen at its greatest length in middle, where the length is about once and one-half that of the third segment, and with each side less conspicuously embracing the side of the third.

LYBÆBA SQUAMIVARIA, Lea (now *Diethusa*).

When describing this species I was mistaken as to the sexes; the specimens noted as probably being males are really females; in addition to the differences of the front tibiæ the males differ from the females in having the rostrum slightly shorter, with the antennæ inserted rather closer to the apex, and the metasternum and basal segment of abdomen with a wide shallow depression common to both.

## NEOMELANTERIUS SUBTUBERCULATUS, Lea

The type of this species is a male; a female (from Comboyne in New South Wales) differs in having the rostrum considerably longer (when at rest the tip is actually upon the base of the abdomen instead of near it), the apical half shining, with smaller and less crowded punctures, and basal half more feebly carinated. The antennæ, instead of being inserted at about one-third from apex of rostrum, are inserted almost in the exact middle.

A female, from the Cairns district, apparently belongs to the species, but has the elytra castaneous, and their punctures larger and more clearly defined than on the type, or than on the Comboyne female.

## MECHISTOCERUS SIMILIS, n. sp.

♂. Black; antennæ and tarsi red. Densely clothed.

*Head* with coarse partially-concealed punctures. Ocular fovea subtriangular. Rostrum long and thin; basal third with concealed punctures and three narrow ridges, elsewhere shining and with minute punctures. Scape inserted one-third from apex of rostrum; second joint of funicle distinctly

longer than first. *Prothorax* moderately transverse, sides strongly rounded; with a narrow median carina; with fairly large punctures, but each almost concealed by its contained scale. *Elytra* rather short, subcordate, base trisinate and about one-fourth wider than prothorax; with rows of large partially-concealed punctures; with rather numerous granules about base, and a few elsewhere. *Metasternum* rather short; with a deep and rather wide median impression dilated at both ends; near middle with a few large punctures, then with more numerous but smaller ones; each episterna with a conspicuous row. *Abdomen* with basal segment flat in middle; with sparse and distinct, but comparatively small, punctures; apical segment with dense punctures. *Legs* long; femora acutely dentate, hind pair distinctly passing apex of elytra. Length, 7-7½ mm.

♀. Differs in being larger (9-10 mm.), rostrum longer, thinner, without basal ridges, and with smaller and sparser basal punctures; antennæ inserted distinctly nearer the middle of rostrum, basal segment of abdomen evenly convex and hind femora just passing apex of elytra.

*Hab.*—Queensland: Cairns (C. French); Little Mulgrave River (H. Hacker and H. H. D. Griffith); Kuranda (Hacker).

Four of the specimens under examination have the basal segment of abdomen flattened; these I believe to be males; five others have that segment convex, and are presumably females. If the sexes are as presumed, then the species is readily distinguished from *denticulatus* by the very different front legs; in any case the clothing of the prothorax should be distinctive. In my table of the genus would be associated with *masteri*, which is a wider species, with denser and otherwise different clothing, and front femora less conspicuously dentate. From *dispar*, to which at first it appears to be closer, it differs in the very different clothing and punctures of prothorax; the insertion of antennæ also is different, and the femoral dentition is weaker. On the elytra the clothing is mostly of a pale-brown, variegated with irregularly distributed sooty spots, and with some paler ones, the latter more or less congested into two feeble fasciæ, one at apical third, and the other (sometimes appearing as a feeble V) at basal third. Each interstice has a feeble row of stout scales, and there is a similar scale in each seriate puncture. On the prothorax the scales are large and individually distinct (except at apex, where they are small and crowded), many are sooty, but there is a distinct line of pale scales along middle, and some irregular lines on sides. On the under-surface the scales are rather sparse, mostly thin and pale, but with some sooty ones on the abdomen. The legs are very densely clothed.

## MECHISTOCERUS LANGUIDUS, Lca.

The type of this species was probably somewhat abraded, as a female now before me (from Cairns) evidently is in perfect condition and has the peculiar scales (much as on the elytra, except that they are slightly larger) denser on the sides and front of prothorax than elsewhere; but amongst them may be noticed setæ similar to those on the type.

The female differs from the male in having the rostrum longer, thinner, paler, and more evenly curved, and only the basal third squamose; the scape inserted somewhat nearer the middle of rostrum; the front legs shorter, and their tibiæ without a conspicuous fringe.

## MECHISTOCERUS DENTICULATUS, Pasc.

Of the male of this species Pascoe stated "tibiis anticis denticulis in series duas ordinatis." Three males (two from the vicinity of Cairns) of the species before me each have the teeth on the front tibiæ so arranged that when a tibia is viewed directly from above a conspicuous fringe of teeth is visible on each side; but in addition there are a few teeth forming an irregular third row. These specimens also have three feeble pale longitudinal stripes on the prothorax.

## Var. MINOR, n. var.

Four males (also from Cairns) differ from the normal form in being much smaller ( $3\frac{3}{4}$ -6 mm.) and with the fringes of teeth reduced in size, so that when a front tibia is viewed from above only one row of teeth is visible at a time, and they have no remnants of a third row. These specimens also are entirely devoid of longitudinal markings on the prothorax.

## MECHISTOCERUS CANCELLATUS, Lea (?).

There are two specimens before me (from Cairns and Kuranda) which, with some doubt, I refer to this species. They differ from the types in having the basal segment of abdomen gently concave, and with large punctures at base only, elsewhere and the second segment with small punctures, usually concealed by the setæ they bear. The punctures on the metasternum are also smaller. They are probably males, and the types are probably females. They have the abdominal punctures much as in *punctiventris*, but all the femora are strongly dentate.

## PERISSOPS MEDIONOTATUS, n. sp.

♂. Black; antennæ of a dingy-red. Moderately clothed with more or less ochreous scales, closely applied to derm, and in places condensed into feeble spots.

*Head* strongly convex, with a feeble median line, ocular

fovea deep but not very large. Eyes finely faceted. Rostrum rather wide, notched on each side of base; with dense punctures, not very large in front of antennæ, coarser and rugose behind same, and leaving three feeble ridges. Scape inserted two-fifths from apex of rostrum, not much shorter than funicle. *Prothorax* moderately transverse, subconical; with numerous small punctures, the sides with large unevenly distributed ones. *Elytra* strongly convex, outlines continuous with those of prothorax; with rows of rather small punctures in feeble striæ, sutural interstice wide, strongly elevated to middle, with dense transverse granules to beyond the middle, sparser ones for a shorter distance on second, and a few on third. *Femora* stout, strongly dentate; tibiæ compressed, lightly curved, the front ones feebly bisinuate on lower-surface. Length,  $8\frac{1}{2}$ -12 mm.

♀. Differs in being wider and much less convex, especially in middle of elytra, rostrum thinner, shining, with much smaller and sparser punctures, and without subbasal ridges, antennæ inserted not quite so close to apex of rostrum; basal segment of abdomen gently convex, instead of feebly concave in middle, and bisinuation of front tibiæ less pronounced.

*Hab.*—Queensland: Mackay (C French).

Close to *mucidus*, but with more uniform clothing between the spots, these being less distinct, except that on each elytron there is a conspicuous pale submedian spot at a position where (on *mucidus*) the spotting is less noticeable. The head has three spots, but the parts between them are also moderately clothed. The abdomen is moderately clothed, but the scales are denser in parts, so that it appears to be feebly trivirgate. On the prothorax there are some sooty scales scattered about. The derm is really of a deep-black, but the clothing causes it to appear a dingy-brown. The fifth, ninth, and tenth striæ are fairly deep near the base of the elytra, but do not extend to the base itself.

#### PERISSOPS TARSALIS, n. sp.

♂. Black. Densely clothed in parts.

*Head* densely and rather coarsely punctured; ocular fovea indistinct. Eyes large and finely faceted. Rostrum rather long, thin, and moderately curved; basal two-thirds with dense and coarse punctures, and a narrow median carina, elsewhere smooth and with minute punctures. *Prothorax* moderately transverse, subconical; with small and rather dense punctures, and with fairly large ones, becoming almost regular on the sides. *Elytra* strongly convex, outlines subcontinuous with those of prothorax; with rows of large deep

punctures, obscured where the clothing is very dense; suture with a few feeble granules. Basal segment of *abdomen* feebly depressed in middle. Front *legs* much longer than the others; all femora strongly dentate; tibiae compressed, somewhat curved, the middle ones angular near outer base. Length,  $10\frac{1}{2}$  mm.

*Hab.*—Queensland: Rockhampton (R. Illidge).

The type is dirty, evidently much abraded, and without antennæ (except for one scape), but the long front legs with curiously clothed front tarsi render it very distinct, although these characters are probably confined to the male. In my table, on account of the middle tibiae, it would be associated with *intricatus* and *intricator*, but it has little in common with those species. On each elytron there is a very conspicuous spot of short scales, densely compacted together, from the second interstice to the fifth, slightly beyond the middle, and another near the base from the third to the shoulder. On the prothorax there is a smaller spot on each side of the middle towards apex; these spots are separated on the type, but possibly are normally connected. On the rest of the upper-surface the clothing appears to have been mostly ochreous or whitish. The front tarsi have a very conspicuous fringe of long hairs on each side, the hairs being considerably longer than the joints are wide. Possibly on specimens in good condition the spots noted are eye-like in character and variegated, but on the type they have a muddy appearance.

#### PERISSOPS PISCICORPUS, n. sp.

Of a dingy-red, in parts obscurely stained with black. Densely clothed with soft, pale, fawn-coloured scales; on the elytra somewhat variegated.

*Head* with punctures normally concealed; inter-ocular fovea narrow. Eyes with rather coarse facets. Rostrum wide and feebly curved, basal third with sculpture concealed, then with rather dense and coarse punctures to antennæ, in front of same shining and with small but clearly-defined punctures. Scape inserted in middle of rostrum, distinctly shorter than funicle. *Prothorax* moderately transverse, apex more than half the width of base; punctures normally more or less concealed; with a feeble median carina. *Elytra* moderately convex, distinctly, but not much, wider than prothorax, parallel-sided to beyond the middle; with rows of large partially-concealed punctures, becoming small posteriorly; with some small more or less concealed granules. *Under-surface* with dense partially-concealed punctures. Basal segment of abdomen feebly convex, its apex feebly incurved

to middle. *Femora* stout, moderately dentate; *tibiæ* gently compressed, somewhat angular near outer base Length, 8 mm.

*Hab.*—Queensland · Cairns (E. Allen)

The density of the clothing is unusual in the genus. In general appearance close to some of the densely-clothed specimens of *granulatus*, but without supplementary teeth in the femoral emargination and middle *tibiæ* angular near external base, as in *albonotatus*, *intricatus*, and *intricator*, although with little else in common with those species. On each elytron of the type there is a small angular spot of sooty scales beyond the middle, and a few much smaller ones elsewhere; in places also there are feeble irregular spots or stripes of whitish scales. Many of the scales, especially on the abdomen, have a peculiar rounded appearance. The clothing on the head is dense and uniform.

PERISSOPS GRANICOLLIS, n. sp.

♂. Black, in places obscurely diluted with red; antennæ and tarsi reddish. Densely clothed with more or less ochreous scales, interspersed with a few white ones; each elytron with a large, subtriangular, medio-lateral patch of sooty scales.

*Head* with moderately dense partially-concealed punctures; a narrow impression behind each eye. Eyes large and rather close together. Rostrum about the length of prothorax and rather thin, moderately curved, almost parallel-sided; with numerous rather small but clearly-defined punctures, becoming larger and concealed on sides about base. Scape inserted about two-fifths from apex of rostrum, slightly shorter than funicle. *Prothorax* moderately transverse, sides strongly rounded, base bisinuate and almost twice the width of apex; with numerous shining granules, more conspicuous on sides than elsewhere; with a short but distinct median carina; punctures concealed. *Elytra* cordate, distinctly wider than prothorax, sides parallel to about the middle; with rows of large more or less concealed punctures. *Mesosternal receptacle* rather short, walls rather thin and widely U-shaped. Basal segment of *abdomen* almost as long as three following combined, rather flat in middle, its suture with second straight. *Legs* rather long; femora strongly dentate, hind pair extending to tip of elytra; *tibiæ* thin. Length, 5½-6½ mm.

♀. Differs in having the rostrum distinctly longer and thinner, with smaller and sparser punctures; scape inserted almost in middle of rostrum, and basal segment of abdomen convex in middle.

*Hab.*—Queensland: Cooktown (H. W. Brown).



This species might have been, with almost equal propriety, referred to *Tyrtæosus*. But, as it is obviously very close to *Perissops robiginosus*, it has been referred to the genus of the latter. From that species it differs in its smaller size, decidedly thinner tibiæ, and different mesosternal receptacle. In *robiginosus* (although not mentioned in the original description) the base of the receptacle has a small tubercle on each side, so that it appears to be bilobed (this appearance, however, is sometimes obscured by scales), and the front portion rises rather abruptly. In the present species the receptacle has a shorter and evenly-rounded or truncate base, and is decidedly less elevated. If the species was regarded as a *Tyrtæosus* it would be, in my second table of that genus, associated with *pardalis*, from which it is abundantly distinct by the medio-lateral dark triangles; these are sometimes composed entirely of dark scales, but on some specimens a few ochreous ones are on them. The elytral interstices appear, in places, like rows of granules through the clothing, and a few granules are really present; but the interstices themselves are transversely impressed in numerous places, so that, on abrasion, they appear like ridges many times interrupted.

PERISSOPS GRANULATUS, Lea.

This species is fairly common on fig-trees in the coastal districts of New South Wales and Queensland. The types were partly abraded; on fresh specimens the clothing, mostly ashen or subochreous, is in parts so dense as to entirely conceal the derm; but usually there is an irregular dark fascia just beyond the middle of the elytra. The prothoracic granules on fresh specimens are indistinct from behind, but distinct from in front. In general appearance some specimens are very close to *robiginosus*, but that species is without supplementary teeth or granules in the femoral emarginations.

PERISSOPS MULTIMACULATUS, Lea.

Three specimens, from the Coen district of North Queensland, appear to represent a variety of this species. They differ from the types in having the derm darker (almost or quite black) and the elytra slightly less convex. The female (the female of the typical form is as yet undescribed) differs from the male in having the rostrum longer, thinner, with much smaller punctures, and with the antennæ inserted rather more distant from the apex.

PERISSOPS ALBONOTATUS, Lea.

The type of this species is evidently much abraded, and a specimen (from the Tweed River) now before me is evidently

in perfect condition. On its upper-surface the pale markings consist of a medio-apical stripe on prothorax, a latero-basal mark, something like an h or k on the right side (and, of course, reversed on the left), and many spots on the elytra (on the type it was stated that there were about fifteen on each elytron, but on the present one there are at least thirty on each), a few of which extend across several interstices, and one on each side near apex is rather elongate. The spaces between the spots are clothed with minute scales, usually more or less brown or sooty. The third interstice is distinctly elevated near the base and has there numerous transverse ridges; similar but less distinct ridges are on the suture and even less distinct ones on some of the other interstices

Genus *OROCHLESIS*, Pascoe <sup>(18)</sup>

*Queenslandica*, Lea. <sup>(19)</sup>

There is before me a Yule Island specimen (taken by d'Albertis) and sent by Dr. Gestro as *O. annularis*,<sup>(20)</sup> Pascoe, although it differs slightly from the original description. Of the conspicuous apical spot Pascoe says "saturate vinosa, albido-marginata" and "the spot is free from scales, and has, although opaque, a somewhat velvety appearance." On the Yule Island specimen the spot is but feebly margined, and the spot itself is really composed of blackish scales, so closely compacted that it is only from certain directions, and in certain lights, that they can be seen to be scales. If Dr. Gestro's specimen is correctly named, as it appears to be, the original figures (plate viii., figures 2 and 2a) are not very happy ones. They, in fact, led me to believe that the genus was one of the allies of *Psepholar*, although certainly Pascoe noted it as allied to *Perissops*. The genus, however, is undoubtedly synonymous with *Queenslandica*, and the latter name must therefore fall.

*OROCHLESIS POSTICALIS*, Lea (*Queenslandica*).

This species is extremely close to *annularis*, but differs from the description in having the subapical spot not at all margined by white scales; it is quite possibly synonymous, but the figures given of *annularis* would give a very misleading idea of it.

(18) Jour. Linn. Soc., 1871, p. 194.

(19) Proc. Linn. Soc., N.S.W., 1903, p. 664.

(20) *O. annularis* must be regarded as the typical species of its genus, as it was the first one described, and the only one figured by Pascoe.

ORCHLESIS MUNDA, Lea (*Queenslandica*)

The clothing of this species is somewhat variable; on the elytra there is usually a large V-shaped patch, where the scales are paler than elsewhere and bounded behind by sooty scales. The V commences on each shoulder and terminates on the suture slightly beyond the middle; it may be sometimes sharply defined and thin, or the whole of the scales enclosed by it may be pale. There are usually a few small granules on the suture near the base, but they are sometimes concealed by the scales.

ORCHLESIS DELTA, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with light-brown or fawn-coloured scales, elytra with a velvety, subapical, triangular patch of blackish scales. Under-surface with mostly whitish scales.

*Head* with dense concealed punctures. Rostrum rather stout, decreasing in width from base to antennæ, and then parallel-sided; basal third with coarse concealed punctures, elsewhere with small crowded ones, except on a short and feeble median line. Antennæ stout, inserted about two-fifths from apex of rostrum. *Prothorax* strongly transverse, sides strongly rounded, apex less than half the width of base; with dense punctures, each covered by a scale. *Elytra* closely applied to and scarcely wider than prothorax, parallel-sided to near apex, which is widely rounded; with rows of large punctures, in light striæ, the striæ fairly distinct, but punctures almost entirely concealed; with a few granules on suture near base. *Under-surface* with fairly large punctures, a single row across each of third and fourth segments of abdomen; and a single row on each metasternal episterna. *Femora* moderately long, strongly grooved, and edentate. Length,  $5\frac{1}{2}$  mm.

*Hab.*—Queensland: Cape York (H. Elgner)

Allied to *posticalis*, but readily distinguished by the subapical spot, which is almost in the shape of an equilateral triangle. On the prothorax the scales are of large size, much larger than those on elytra, and a few of them are white; but on the metasternum and two basal segments of abdomen they are almost as large. The tip of the scape and the joints of the funicle are supplied with long straggling hairs. The type is probably a male.

EVANIOCIS, n. g.

*Head* fairly large. Eyes moderately large, coarsely faceted. Rostrum not very long and rather wide, feebly curved. Antennæ rather stout, inserted about middle of

rostrum; scape rather short; funicle with two basal joints elongate, the others strongly transverse and close together; club elongate-elliptic, subcontinuous with funicle, joints indistinct. *Prothorax* transverse, sides rounded, apex produced. *Scutellum* distinct. *Elytra* closely applied to and very little wider than prothorax, base feebly trisinate. *Pectoral canal* deep and wide, terminated just behind front coxæ. Mesosternal receptacle rather strongly raised, emargination semi-circular, cavernous. Metasternum slightly shorter than the following segment; episterna rather large. *Abdomen* with first segment as long as second and third combined, its apex lightly incurved to middle, second slightly longer than third and fourth combined. *Legs* rather short; femora dentate and feebly grooved; tibiæ straight, feebly dentate near outer base.

The genus is of somewhat doubtful position, but for the present may be placed near *Teppera*, from which it differs in its coarsely faceted eyes and elytra not separately rounded at base. Its antennæ and tibiæ, however, are somewhat similar. In some respects it seems close to *Phleoglymma*, from which it differs in the antennæ, eyes, and mesosternal receptacle. In the table of genera allied to *Cryptorhynchus* <sup>(21)</sup> would be associated with *Hyperiosoma* and *Sympediosoma*, whose antennæ and tibiæ are very different.

Rostrum lightly but distinctly curved	ellipticus
Rostrum almost straight	... .. albicans

#### EVANIOCIS ELLIPTICUS, n. sp.

Very dark-brown; antennæ and tarsi somewhat paler. Densely clothed with somewhat fawn-coloured scales, but in places becoming sooty.

*Head* rather strongly convex, punctures concealed. Rostrum scarcely as long as prothorax, lightly but distinctly curved, sides lightly incurved to middle; with dense punctures partially-concealed on apical half, almost entirely so on basal half. Scape inserted in middle of rostrum. *Prothorax* moderately transverse, subconical, base bisinuate and twice the width of apex; with dense normally-concealed punctures. *Elytra* oblong-cordate, about twice as long as wide; with rows of large partially-concealed punctures becoming smaller posteriorly; third interstice slightly elevated and thickened near base. *Under-surface* with dense normally-concealed punctures. *Femora* rather lightly dentate, hind pair not extending to apical segment. Length,  $5\frac{1}{4}$  mm.

*Hab.*—Queensland: Cairns (E. Allen).

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(21) Proc. Linn. Soc., N.S.W., 1907, pp. 401-403.

On the prothorax the scales have a somewhat sooty appearance on four spots across the middle, and on two at base and two at apex, but the four latter are very feeble. On the elytra the sooty scales occupy most of the basal two-thirds, and form two small spots on the posterior declivity. The head is mostly clothed with sooty scales. On the under-surface the clothing is dense; there are a few white scales on the sterna, but sooty ones are absent. Nearly all the pale scales (except on the legs) are quite circular, this being especially noticeable on the under-surface. From certain directions the small tooth, near the outer base of each tibia, is fairly distinct, but it is more or less concealed by the clothing.

EVANIOCIS ALBICANS, n. sp.

Blackish-brown; antennæ and tarsi of a dingy-red. Densely clothed with white scales; with a few sooty ones scattered about on head and prothorax; but head with a large, irregular, sooty blotch.

*Head* with dense concealed punctures. Rostrum almost perfectly straight, slightly dilated near base, elsewhere parallel-sided; basal third with coarse concealed punctures, elsewhere shining and with minute punctures. Scape inserted slightly nearer base than apex of rostrum. *Prothorax* subconical, very little wider than long; with dense normally-concealed punctures of uniform size. *Elytra* with outlines and sculpture as in preceding species. *Under-surface* with dense normally-concealed punctures. *Femora* very feebly dentate. Length,  $6\frac{1}{2}$  mm.

*Hab.*—Queensland: Kuranda (G. E. Bryant).

The outlines are much as in the preceding species, but the clothing is very different, the four hind tibiæ are more distinctly dentate near the outer base, and the rostrum is almost quite straight. The dentition of the four hind femora is very feeble, and could easily be overlooked, whilst of the front pair it is so very small and obscured by clothing that it almost reaches the vanishing point.

TYRTÆOSUS TRIANGULIFERUS, n. sp.

♂. Of a dingy piceous-brown or black, in places more or less distinctly diluted with red; antennæ and tarsi reddish. Prothorax with scales varying from ashen to ochreous, and usually somewhat lineate in arrangement. Elytra with rather dense ashen-grey scales, but absent from a large subtriangular space on each side, the interstices with more or less regular rows of ochreous scales, but none on dark lateral spaces.

*Head* with front concave and coarsely punctured. Eyes moderately close together. Rostrum moderately long; basal half with very coarse punctures, and with a very feeble ridge, apical half with sharply-defined punctures. *Prothorax* almost twice as wide as long, sides rounded and feebly increasing in width to near apex, and then suddenly and strongly narrowed so that the apex is only half the width of the base; with large round punctures crowded together but usually nowhere confluent; with a strongly elevated, narrow, median carina. *Elytra* oblong-cordate, no wider than widest part of prothorax; with rows of large deep punctures in feeble striæ, and becoming smaller posteriorly; third, fifth, and seventh interstices distinctly raised, and, as some of the others, with partially-concealed squamiferous granules. *Metasternum* with a moderate and interrupted ridge on each side between coxæ; episterna each with a continuous row of strong punctures. *Abdomen* with first segment feebly concave, and somewhat shorter than usual, third and fourth each with a semi-double row of punctures across middle. *Legs* moderately stout; femora strongly dentate, all tibiæ somewhat thin, lightly curved, and not dilated to apex. Length, 4-6½ mm.

♀ Differs in having the rostrum longer, thinner, more shining, and with smaller and sparser punctures, prothorax less dilated in front, with its widest portion nearer base than apex and less than width of elytra; and basal segment of abdomen moderately convex.

*Hab.*—Queensland: Cairns (E. Allen); Little Mulgrave River (H. Hacker and H. H. D. Griffith from Horace W. Brown); New South Wales: Comboyne (W. H. Muldoon).

A rather distinct species on account of the prothorax of the male. The side of each elytron has a subtriangular dark patch, largely, but not entirely, due to absence of ashen scales; the few scales present on it are all sooty, the patch usually extends to the fifth interstice, but sometimes to the second, it commences on the shoulder, and terminates level with the fourth abdominal segment, or thereabouts. On some specimens there appear to be four longitudinal stripes on the prothorax, and one transverse one, but the linear arrangement is more or less broken up. The depression behind each eye is unusually deep, and the two are dilated till they meet in front, causing the whole front of the head to appear concave, with a quadrisinuate forehead, as in many of the allies of *Poropterus*. In *subopacus* it is somewhat similar but less pronounced. The elytral punctures, although large, are partially concealed by the clothing, but on the sides their full extent is usually distinct.

## TYRTÆOSUS SQUAMIVARIUS, n. sp.

Sooty-black, in parts obscurely diluted with red; antennæ and tarsi reddish. Irregularly clothed with scales varying from white to sooty.

*Head* depressed, and with coarse punctures and a median carina in front. *Rostrum* moderately long, with coarse punctures on basal half, apical half with much smaller but more sharply-defined ones, sparser between antennæ than elsewhere. *Prothorax* with sides strongly rounded; with rather large, round, deep, non-confluent punctures, becoming smaller towards apex; with a strong, narrow, continuous median carina. *Elytra* oblong-cordate, shoulders distinctly wider than prothorax; with rows of large and somewhat distant punctures, in rather feeble striæ; alternate interstices distinctly elevated, and with partially-concealed granules. *Metasternum* on each side between coxæ with an oblique ridge, very feeble in front, but strong posteriorly; episterna each with a continuous row of strong punctures. *Abdomen* with a single row of punctures across each of the third and fourth segments. *Legs* stout; femora strongly dentate; all tibiæ thin and not dilated to apex. Length,  $6\frac{1}{4}$ - $6\frac{1}{2}$  mm.

*Hab.*—New South Wales: Illawarra (H. W. Cox); Tweed River (H. W. Brown).

The sooty scales are fairly numerous, but indistinct on account of their close resemblance to the derm. On each of the two specimens under examination there is a thin and more or less oblique stripe of snowy scales, starting from near the shoulder, and terminated at the third interstice. On the prothorax there are three feeble longitudinal stripes of whitish (sometimes ochreous) scales, and one transverse stripe. On the elytra (especially about the shoulders and apex) many of the scales are more or less reddish-ochreous. On the under-surface the whitish and ochreous scales are mostly confined to the middle parts. The legs are clothed with numerous whitish setæ. The depression on the head is quite as large as on the preceding species, but is not so sharply defined posteriorly. As the basal segment of the abdomen is gently convex on each, the types are probably females.

## TYRTÆOSUS PULCHER, n. sp.

♂. Jet-black, front of prothorax diluted with red; antennæ and tarsi reddish. Clothing irregular in distribution and variously coloured.

*Head* with rather small and sparse punctures. Eyes larger and rather closer together than usual, a narrow impression behind each. *Rostrum* moderately long, basal

portion with moderately large and rather dense punctures, small elsewhere. Club rather long. *Prothorax* decidedly transverse, sides moderately rounded, base strongly bisinuate; with moderately dense but comparatively small punctures, becoming very small at apex; median carina entirely absent. *Elytra* not much wider than prothorax, almost parallel-sided to near apex; with rows of large deep punctures, becoming smaller posteriorly, in feeble striæ near base, but striæ more distinct posteriorly; alternate interstices elevated, the third very strongly so, and with transverse granules on basal fourth. *Metasternum* rather feebly ridged on each side between coxæ, episterna each with a continuous row of punctures. *Abdomen* with basal segment flattened in middle, third and fourth with rather dense setiferous punctures, not in rows. *Legs* stout; femora rather strongly dentate; tibiæ compressed, somewhat curved, rather narrowed to apex, punctures very small and not in conspicuous striæ. Length, 6 mm.

♀. Differs in having rostrum somewhat longer and thinner (especially towards apex), shining, with smaller and sparser punctures; antennæ inserted not quite so close to apex of rostrum, and basal segment of abdomen moderately convex.

*Hab* —Queensland: Coen River (H. Hacker).

At first sight apparently belonging to *Perissops*, but the eyes are coarsely faceted and abdominal sutures straight. This and several other species of the genus with alternate interstices conspicuously elevated look as if they might belong to *Cælosternus*, but their femora are unidentate. The metallic clothing is almost unique in the Australian members of the subfamily. On the prothorax the clothing varies from thin setæ to fairly stout scales, and in colour from white to sooty, the pale scales (some of which have a purplish lustre) are more or less condensed into three feeble longitudinal stripes, on each side in front there is a small spot of white scales with a golden lustre. On the elytra there are two very irregular fasciæ of pale scales, a feeble one at basal third, irregularly traceable on to shoulders, and a wider one at summit of posterior declivity; the pale scales from some directions appear to be almost stramineous in colour, but they vary from almost every point of view from red, to purple, and green, and golden-green. From some directions also some of the interstices have a greenish lustre, this being due to minute scales that, individually, are almost too small to be seen under a lens. The under-surface and legs are clothed with whitish setæ. The prothoracic punctures (where not obscured by clothing) look as if each had been punched in.



## TYRTÆOSUS MIXTUS, n. sp.

♂. Dark reddish-brown, in places black or blackish; antennæ and tarsi reddish. Rather densely clothed with somewhat fawn-coloured scales, almost uniform on under-surface and legs, but variegated with white and sooty on upper-surface; elytral interstices with feeble rows of stout scales.

*Head* with dense and rather coarse punctures. Eyes widely separated, a narrow depression behind each. Rostrum rather short, wide, and feebly curved; with coarse and dense punctures partially concealed towards base. Antennæ rather short, inserted almost at exact middle of rostrum. *Prothorax* slightly wider than long, sides strongly rounded; with dense, moderately large, round, deep, non-confluent punctures; median carina absent. *Elytra* not much wider than prothorax, long and parallel-sided to near apex, without sub-humeral notches; with rows of fairly large, deep, oblong punctures, becoming small posteriorly and somewhat rounded on sides, interstices much wider than punctures, and each with a more or less concealed row of granules. *Metasternum* with a rather feeble ridge on each side between coxæ; episterna each with a continuous row of punctures, but becoming double posteriorly. *Abdomen* with first segment not much longer than second, depressed in middle, its apex rather strongly incurved to middle; third and fourth with dense squamiferous punctures. *Legs* stout; femora strongly and acutely dentate; all tibiæ bisinuate on lower-surface, and not dilated to apex. Length,  $5\frac{1}{2}$  mm.

♀. Differs in having the rostrum slightly longer and thinner, with scales only at extreme base, elsewhere shining and with small but clearly-defined punctures, and basal segment of abdomen moderately convex.

*Hab.*—Queensland: Mount Tambourine (H. J. Carter).

Close to *brevirostris*, but with two conspicuous rows of squamiferous punctures on the hind portion of the metasternal episterna, and elytra with whitish scales in parts, and without the preapical callus on each marked, although there is a whitish spot immediately behind it on the male, but not on the female. The sooty scales are distributed in irregular spots and patches; on the elytra there is a vague whitish fascia at the basal third, and remnants of another at summit of the posterior declivity.

Some specimens, from the Tweed River and Bundaberg, indicate that this species is somewhat variable in size and markings. They are all smaller ( $4-4\frac{1}{2}$  mm.) than the types, and have the dark scales on the upper-surface forming four or more spots on the prothorax, and three irregular mottlings

on the elytra: one at the base, one near the apex, and one (looking like a fascia irregularly broken up) across the middle. The subbasal white spot on each elytron may be very conspicuous and extending across five interstices, or very feeble (on one specimen absent). On several specimens there are distinct white spots intermingled with the subapical dark ones.

TYRTÆOSUS MACROPS, n. sp

♂. Deep-black; antennæ and tarsi reddish. Densely clothed with sooty, variegated with snowy-white, scales.

*Head* with dense normally-concealed punctures. *Eyes* larger and closer together than usual. Rostrum rather long and thin, but sides dilated about base; basal third with coarse and dense punctures, elsewhere with fairly dense but much smaller and clearly-defined ones. Antennæ inserted distinctly nearer to base than to apex of rostrum; scape about half the length of funicle and club combined. *Prothorax* almost twice as wide as long, sides strongly rounded, apex more than half the width of base; with dense, round, non-confluent punctures; without median carina. *Elytra* subcordate, base trisinuate, and very little wider than prothorax, sides strongly rounded. *Metasternum* with a feeble ridge on each side between coxæ; punctures of episterna not interrupted. *Abdomen* with dense squamiferous punctures on third and fourth segments, forming two rows on each across middle, first segment as long as third and fourth combined, flat in middle and its apex perfectly straight. *Legs* stout; femora strongly and acutely dentate; tibiæ lightly narrowed to apex. Length, 3.4½ mm.

♀. Differs in having rostrum longer, thinner, and with smaller punctures, and basal segment of abdomen gently convex.

*Hab.*—Queensland: Coen River (H. Hacker); Cairns (E. Allen).

At first sight apparently belonging to *Neodecilaus*. but the eyes are coarsely faceted, and femora strongly dentate. The mesosternal receptacle at first appears different to that of others of the genus, but this is due more to its clothing than to much real difference in shape. The insertion of antennæ is also at variance with others; the clothing is denser and the individual scales larger than usual. The white scales are distributed sparsely on the upper-surface, but are condensed to form three (or one) longitudinal line on the prothorax, and a short stripe on the fourth interstice posteriorly; they almost uniformly clothe the under-surface, and are fairly dense on the under parts of the legs. Before abrasion the interstices appear to be much wider than the seriate punctures,

these usually being traceable only by their contained scales, but on abrasion they are seen (except on the posterior declivity) to be large, and almost, in places quite, as wide as the interstices; these also are seen to have feeble granules that are normally quite concealed.

TYRTÆOSUS BIFASCIATUS, n. sp

♂. Black, in places sometimes obscurely diluted with red; antennæ and tarsi reddish. Upper-surface with dingy-brown or sooty scales, seldom rising to general level. Elytra with a distinct but irregular fascia of soft white scales at basal third, remnants of another at summit of posterior declivity, and with two apical spots. Under-surface and legs with more or less whitish scales and setæ.

*Head* with coarse crowded punctures in front, becoming smaller posteriorly. Eyes separated the width of base of rostrum, a partially-concealed depression behind each. Rostrum rather short and stout, feebly dilated to apex; with coarse crowded punctures quite as large at apex as at base. Club rather larger than usual. *Prothorax* strongly transverse; sides of basal three-fourths rather lightly rounded, then suddenly narrowed, apex less than half the width of base; with dense, and rather large, round, deep, non-confluent punctures; median carina rather feeble and irregular but traceable throughout. *Elytra* elongate-cordate, not much wider than prothorax, basal half parallel-sided, subhumeral incurvature very feeble; with rows of large punctures, each of which is separated by a depressed transverse ridge on basal two-thirds, posteriorly with smaller punctures and deeper striæ; interstices about the width of punctures, each with a more or less irregular row of distinct punctures, and with many feeble transverse impressions. *Metasternum* with a strong ridge on each side between coxæ; punctures of episterna interrupted. *Abdomen* with first segment feebly depressed in middle, apex widely and feebly produced in middle, where the length is slightly more than that of third and fourth combined, second along middle very little longer than third or fourth, each of these with an irregular double row of punctures across middle. *Legs* stout; femora rather strongly dentate; hind tibiæ moderately dilated at apex. Length, 5½-6 mm.

♀. Differs in having the abdomen with basal segment uniformly convex, its apex not produced, and second segment distinctly longer than third or fourth.

*Hab.*—Queensland: Cairns (E. Allen).

The head and rostrum is much as in *crassirostris*, but that species has edentate femora. One specimen has a vague white

median line on the prothorax, and on the same specimen the scutellum is densely clothed with white scales, but on the others it is more or less glabrous. On many species of the genus the scutellum is rather densely squamose, but as its clothing is particularly liable to abrasion it is usually better left out of consideration. The rostrum of the female is quite as coarsely sculptured as in the male.

TYRTÆOSUS SIMULATOR, Lea.

The locality of the type of this species was somewhat doubtful. There are now, however, two specimens before me, sent by Mr. C. French as from Queensland and another sent by Dr. Turner as from Brisbane. The elytral interstices at first appear to be double, this being due to each having a row of large punctures along its middle.

TYRTÆOSUS CINERASCENS, Lea.

This species was described as having the punctures of the metasternal episterna not quite continuous; on the types, in fact, and on several recently-acquired specimens, just behind the triangular projection on each episternum, there is a short impunctate and usually shining space. But in two specimens from Sydney, and on two from Hobart, this space is supplied with punctures.

TYRTÆOSUS ICHTHYOSOMUS, Lea.

Some specimens from Cape York differ from the types in being smaller (5 mm. only) and with the punctures on each metasternal episternum forming a single row, irregular only on the triangular inner projection. The third and fourth abdominal segments also have each an almost regular single row of punctures across the middle, but on the sides they become irregular.

Many specimens have the prothoracic carina quite concealed or extremely feeble; on others it is represented by a short, shining, median space.

TYRTÆOSUS VETUSTUS, Pasc.

A common Queensland species, varying in length from  $4\frac{3}{4}$  to  $8\frac{1}{2}$  mm. The punctures of the metasternal episterna are usually interrupted, but are sometimes continuous throughout.

TYRTÆOSUS PARDALIS, Pasc.

From Dr. Gestro I received a specimen, evidently a co-type, from Somerset (the original locality) labelled as *pardalis* and agreeing with the description except in being slightly smaller. In my table of the genus, *pardalis* is placed with

the species whose third and fourth abdominal segments have each two or more rows of punctures (on the co-type these segments have each a single row of punctures across middle); and punctures on metasternal episterna not continuous throughout (on the co-type they are continuous). Nevertheless the species which I described as *pardalis* <sup>(22)</sup> appears to agree with the co-type in all other essential features, and, as noted under some of the preceding species, the interruption, or otherwise, of the punctures on the episterna appears subject to variation, and I previously attached too much importance to it.

*TYRTÆOSUS IMITATOR*, Lea, var. *NORFOLCENSIS*, n. var.

A specimen, from Norfolk Island, differs from the type in having the punctures on the elytral interstices considerably smaller, the elytral scales distinctly narrower, the tibiae more dilated at apex, and the femora still more feebly dentate.

*TYRTÆOSELLUS ALTERNATUS*, n. sp.

Blackish, in parts obscurely diluted with red; antennæ, tibiae, and tarsi reddish. Moderately densely clothed with adpressed scales, interspersed with stout suberect ones.

*Head* with dense partially - concealed punctures. Rostrum moderately stout, sides feebly incurved to middle; basal half with coarse more or less concealed punctures, elsewhere with smaller but clearly-defined ones. Antennæ inserted about two-fifths from apex of rostrum. *Prothorax* moderately transverse, sides moderately rounded, apex more than half the width of middle; with dense round punctures; with a feeble median carina. *Elytra* oblong-cordate, parallel-sided to beyond the middle; with rows of large partially-concealed punctures, becoming smaller posteriorly; third and fifth interstices lightly but distinctly elevated, the seventh less noticeably so. *Under-surface* with fairly dense and large punctures; quite as large on third and fourth segments of abdomen as elsewhere, but much denser and smaller on apical segment. *Femora* edentate, hind pair extending almost to apex of elytra. Length, 3 mm.

*Hab.*—New South Wales: Tweed River (W. W. Froggatt).

Readily distinguished from other species by the elevation of the alternate interstices. On the type (probably a male) the depressed scales are mostly of a dingy greyish-brown or obscure-fawn, but in some lights on the elytra they appear to have a distinct purplish gloss, especially on a large medio-basal space; from other directions, however, this gloss is not

(22) Proc. Linn. Soc., N.S.W., 1902, p. 417.

evident. The elytra also appear to have a few obscure lines or patches of somewhat sooty scales, but this may be due to partial abrasion. On the prothorax there are three obscure lines of pale scales. The under-surface is sparsely clothed.

*BOTHYNACRUM OCHREONOTATUM*, n. sp.

♂. Black; antennæ and tarsi reddish. Rather sparsely clothed with thin whitish scales. Prothorax with five conspicuous ochreous spots of scales: a medio-basal one, two medio-lateral ones, and two at apex; elytra with numerous ochreous spots, but mostly on the third, fifth, and seventh interstices. In addition with a conspicuous, postmedian, sutural patch of white scales.

*Head* with moderately dense punctures. Rostrum fully the length of prothorax, with a distinct median carina; with dense punctures more or less concealed behind antennæ. Antennæ thin, inserted near tip of rostrum. *Prothorax* lightly transverse, apex about half the width of middle; with a narrow continuous median carina; with large punctures, causing the surface to appear subgranulate. *Elytra* conspicuously wider than prothorax, parallel-sided to about the middle; with rows of very large punctures, becoming small posteriorly; interstices obscurely punctate and granulate. *Under-surface* with rather dense punctures, larger on metasternum and two basal segments of abdomen than elsewhere; apical segment with a large round fovea. *Legs* long and thin; femora rather lightly dentate; tibiæ gently curved. Length, 5-6 mm

♀. Differs in being somewhat wider, rostrum thinner, non-carinate; with fairly large partially-concealed punctures only on basal third, elsewhere shining and almost impunctate; antennæ somewhat shorter and inserted less close to apex; and apical segment of abdomen non-foveate.

*Hab.*—New South Wales: Sydney (H. J. Carter); Kiama (E. W. Ferguson); Tweed River (H. W. Brown).

As the hind femora do not pass the elytra, although they extend almost to the tip, this species would be associated<sup>(23)</sup> with *Tryptosus*; but as in other respects it agrees better with *Bothynacrum*, and notably in the large abdominal fovea of the male it has been referred to the latter genus. From *storeoides* it differs in its darker colour, conspicuous ochreous spots, thinner femora with smaller teeth, and punctures of abdomen. To the naked eye the patch of white scales on the suture appears like an irregular V, as on the second interstice it is produced in front of the part on the first; it is margined

(23) In a table of the genera applied to *Cryptorhynchus* in Proc. Linn. Soc., N.S.W., 1907, pp. 401-403.

posteriorly with a few ochreous scales. The prothoracic punctures are somewhat obscured by scales, but are usually longer than wide, here and there a few of them appear to be longitudinally confluent.

PEZICHUS PARALLELIROSTRIS, n. sp.

Black; antennæ and tarsi red. Moderately densely clothed with sooty and ochreous or pale-brown scales; denser and paler on legs than elsewhere; a conspicuous ochreous spot on third interstice at summit of posterior declivity.

*Head* with rather dense punctures, each containing a scale, scales and punctures larger in front than towards base. *Rostrum* rather long, thin, and parallel-sided; behind antennæ with irregular rows of partially-concealed punctures, and with a feeble median carina; in front shining and with small but clearly-defined punctures. *Antennæ* thin, inserted one-fourth from apex of rostrum; scape slightly longer than funicle; club elongate. *Prothorax* about as long as wide, sides strongly rounded; with dense partially-concealed punctures; with a narrow continuous median carina. *Scutellum* elevated and distinct. *Elytra* oblong-cordate, much wider than prothorax; with rows of large, irregularly oblong punctures, becoming smaller posteriorly; interstices with a few granules, the third with a conspicuous elongated fascicle near base, and a longer one about middle. *Legs* long; femora rather strongly dentate, hind pair distinctly passing apex of elytra. Length, 7-7½ mm.

*Hab.*—Queensland: Kuranda (H. H. D. Griffith).

Rather close to *gracilis*, but larger and stouter, legs somewhat shorter and stouter, scutellum more distinct and fascicles less so. On the prothorax the carina is traceable throughout and the median fascicle is very feeble (practically absent). On *gracilis* the carina is very feeble at base and apex, and the median fascicle is conspicuous. The elytral fascicles, which are supported by feeble tubercular swellings, are also composed of shorter scales than on *gracilis*; their scales are mostly sooty, but the conspicuous ochreous spot on each elytron is part of the larger fascicle. On the basal half of the elytra the interstices are no wider than the punctures, and often distinctly narrower; on the apical half they are usually much wider and each is supplied with a row of stout pale scales. The two typical specimens belong to but one sex; but that sex is doubtful.

NEOMYSTOCIS VIRIDIS, n. sp.

Dull reddish-brown, some parts paler. Densely clothed with moss-green scales; with a few sooty and paler ones.

*Head* with small, dense, concealed punctures. *Rostrum* moderately long and rather thin, sides lightly incurved to middle; apical two-thirds shining and with minute punctures, elsewhere with larger but more or less concealed ones. *Antennæ* moderately thin; scape inserted in middle of rostrum, slightly shorter than funicle; second joint of funicle slightly longer than first. *Prothorax* moderately transverse, basal two-thirds with gently rounded sides, apex more than half the width of middle; with four feeble swellings across middle, and a feeble ridge on each side of apex; with a very conspicuous median carina; punctures normally concealed; with a small nude space near the middle of each side. *Scutellum* distinct. *Elytra* distinctly wider than prothorax, parallel-sided to slightly beyond the middle; with irregular rows of large punctures; third interstice with two large round tubercles: one near base, the other median; fourth with a small tubercle before the middle, and a large one near apex; each shoulder tuberculiform, and a fairly large tubercle between it and the subbasal one on third interstice; elsewhere with a few small swellings. Basal segment of *abdomen* slightly longer than second, its apex distinctly incurved to middle; second distinctly longer than third and fourth combined. *Legs* rather long; femora acutely dentate; tibiæ compressed. Length, 12 mm.

*Hab.*—New South Wales: Tweed River (H. W. Brown).

With the conspicuously green scales of fresh specimens of *squamiventris*, but with shorter legs, larger elytral tubercles, more conspicuous prothoracic carina, and abdominal segments different. The outlines of its upper-surface are suggestive of affinity with *Isur gallinago*, and *Pseudometyrus antares*, of the *Chatectetorus* group. On the elytra there are some pale elongate scales scattered about, and they conspicuously crown the small median tubercle on the fourth interstice. The large tubercles on the third, and the median ones on the prothorax, are crowned with sooty scales. The type, whose sex is doubtful, is evidently in perfect condition, but probably (as with other normally green species of the sub-family) specimens that have been in alcohol or are old and greasy will have the scales more or less greyish. The three large tubercles on each elytron are almost in a line.

#### Genus HYPARINUS, Pascoe.<sup>(24)</sup>

There is before me a specimen, taken by d'Albertis in New Guinea and sent by Dr. Gestro as *Hyparinus dispar*, and I believe correctly so. The specimen measures 10 mm., and

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(24) Ann. Mus. Civ. Gen., 1885, p. 275.



so, according to the description, is presumably a female. There are several species of the same genus in Australia, and some additional particulars to those contained in the original generic and specific diagnoses may be acceptable. Pascoe described the three intermediate segments of abdomen as equal, but the second is just a trifle longer than third or fourth, and in several other (Australian) species is distinctly longer. He described the prothorax as longitudinally sulcate, but this is scarcely correct; the prothorax is flattened and sparsely squamose along middle, and in the exact middle the derm is glabrous, but there is no actual groove or sulcus. The head is conspicuously quadri-impressed in front, with conspicuous costæ separating the impressions. The elytra have a row of small shining granules on each side of the suture; they have fairly large punctures, subseriatly arranged, but not in striæ. The basal segment of abdomen has a conspicuous notch in the middle of its apex. The hind femora, when placed in the same line as the abdomen, have their teeth level with the tip of the elytra, so that their apices considerably pass it.<sup>(25)</sup> The genus is allied to *Pezichus* and *Neomystocis*, from the former distinguished by the finely-faceted eyes, and from the latter by the cavernous mesosternal receptacle. All the species are winged.

#### HYPARINUS DISPAR, Pasc.<sup>(26)</sup>

A specimen from Kuranda (from Mr. Griffith, who has another from the Mulgrave River) agrees perfectly with the above noted specimen. It is now first recorded as Australian.

#### HYPARINUS TENUIROSTRIS, n. sp.

♂. Black; antennæ and tarsi red. Rather densely clothed with muddy-brown or sooty scales; with longer scales rather thickly scattered about, especially on the legs. Prothorax with several feeble fascicles; elytra with fascicles on tubercles.

*Head* with forehead strongly quadrisinuate. Eyes very large. Rostrum very long and thin; basal fifth with coarse partially-concealed punctures, then with small but distinct ones to insertion of antennæ, in front of same shining and with sparse and minute punctures. Antennæ thin; scape inserted two-fifths from base of rostrum, almost the length of four following joints combined; funicle with second joint almost twice the length of first, the others regularly decreasing in length, but none transverse. *Prothorax* rather lightly

(25) In the figure the femora are drawn as if they would not, or scarcely, pass the tip.

(26) Ann. Mus. Civ. Gen., 1885, p. 276, pl. ii., fig. 3.

transverse, sides strongly rounded, apex about half the width of base; with very dense normally-concealed punctures. *Elytra* subcordate, base strongly trisinate, shoulders thickened; with rows of large partially-concealed punctures; with a few sutural granules; each with five distinct tubercles and some smaller ones. Basal segment of *abdomen* as long as second and third combined, its apex evenly incurved to middle; second almost as long as third and fourth combined. *Legs* long; femora stout, strongly and acutely dentate, hind ones passing apex of *elytra* for a considerable distance; tibiae very thin, the hind ones shallowly emarginate near apex, the apex itself with two golden fascicles, the apical hook long, strongly curved and with its apex again curved. Length, 10-11 mm.

♀. Differs in having the antennæ inserted rather nearer base of rostrum, the rostrum itself more sparsely clothed about base, basal segment of *abdomen* gently convex, and legs somewhat shorter, with stouter tibiae, the hind pair of which have apical spur as on the others and with one fascicle only.

*Hab* —New South Wales: Dorrigo (H. J. Carter and E. W. Ferguson).

In general appearance remarkably close to *dispar*, but with second segment of *abdomen* distinctly longer than third and its suture with the first curved in middle instead of straight. The *elytral* tubercles are placed as on *brevipes*. On the type male the prosternum has numerous whitish scales margining the pectoral canal; its hind tibiae are also curiously armed.

#### DYSOPHIRHINUS QUADRINOTATUS, n. sp.

Black; antennæ and claw joint of a dingy-red. Moderately clothed with ochreous or brownish scales, in places becoming sooty. *Elytra* with four conspicuous pale spots: two before and two beyond the middle; a conspicuous triangle of pale scales on each side of mesosternum.

*Head* with a feeble median ridge; with a narrow impression behind each eye. Rostrum about as long as prothorax, evenly curved, sides incurved to middle, but feebly dilated at antennæ; on basal third punctures concealed, but elsewhere clearly defined and rather dense. Scape inserted about one-third from apex of rostrum; second joint of funicle longer than first. *Prothorax* subconical, about as long as wide; with numerous large, round, depressed granules or small tubercles, absent from a fairly large medio-apical space; with a conspicuous median carina. *Elytra* elongate-subcordate, each separately rounded at base, not much but distinctly wider than prothorax, sides decreasing in width

from shoulders to apex; with rows of large deep punctures; interstices evenly rounded on sides, but not about suture; suture with some small granules. *Under-surface* with sparse punctures. *Legs* rather long and thin, femora lightly dentate, hind pair scarcely extending to tip of elytra. Length, 17-18 mm.

*Hab.*—Queensland: Kuranda (H. W. Brown).

Readily distinguished from *grandis* by the spots on elytra and metasternum. From the New Guinea *albosparsus* it differs in being more densely clothed, elytra more narrowed posteriorly, and with only four spots; these are on the fourth interstices, but also partly on the third, and are at almost equal distances, both longitudinally and transversely. The hind femora when placed in a line with the elytra appear to just extend to the tip of same. In *grandis* in the males they distinctly pass the apex, in the females they usually just pass it, but in some small ones they terminate before the apex. The types (two) are evidently of but one sex, probably female.

#### PROTOPALUS SCHONHERRI, Waterh.

Mr. H. W. Brown has taken two pairs of this species in the Cairns district, with the shoulders of both sexes much more prominent than in the typical form (quite as prominent as in *dromedarius*). The elytra are also rather more robust.

#### PALETONIDISTUS TRISINUATUS, Lea.

The forehead of the type of this species was, quite correctly, described as trisinuate; but six specimens, from Dorrigo, recently sent for examination by Dr. Ferguson, all have the forehead distinctly quadrisinuate. On the type the head has a median carina that does not extend to the forehead, consequently the median sinus is not interrupted; but on the Dorrigo specimens the carina is continuous to the forehead, thus splitting up the median sinus into two. The tibiae are strongly bisinuate on their lower-surface, this being due to an almost angular projection at the middle of each. On specimens in good condition the disc of the prothorax appears to be impunctate, but after the scales have been abraded punctures become visible. The mesosternal receptacle was incorrectly described as longer than wide, as it is really moderately transverse, although, at a glance, it appears to be slightly longer than wide; its median ridge is scarcely traceable on specimens in good condition.

The female differs from the male in being somewhat wider, with less of the rostrum coarsely sculptured, and the sinuation of the tibiae more pronounced.

## HEXYMUS ALATUS, n. sp.

♂. Black; antennæ and tarsi of a rather bright-red. Closely covered with small dingy-brown scales; with numerous stout suberect scales, mostly ochreous or pale-brown, but sometimes sooty, interspersed.

*Head* with very dense concealed punctures. Rostrum long and rather thin, slightly decreasing in width from base to antennæ, and then parallel-sided to apex; on basal two-fifths with coarse concealed punctures and a narrow median ridge, elsewhere shining and with small punctures. Antennæ thin, inserted about two-fifths from apex of rostrum; second joint of funicle almost twice the length of first. *Prothorax* rather widely transverse, basal two-thirds almost parallel-sided, apex about half the width of base; with a distinct but obtuse median ridge. *Scutellum* fairly large. *Elytra* oblong-cordate, distinctly wider than prothorax, base strongly trisinate, sides gently rounded: with rows of rather large, angular, partially-concealed punctures; third interstice with a feeble elevation at basal third and a more distinct one at middle, fifth with a small one at basal third. *Wings* present. *Under-surface* with dense and mostly-concealed punctures, a few of large size at base of metasternum and of abdomen. Metasternum not much shorter than the following segment. *Legs* long; femora stout, strongly and acutely dentate, hind ones passing tip of elytra; tibiæ thin, somewhat curved at base. Length,  $7\frac{1}{4}$ -8 mm.

♀. Differs in having the rostrum somewhat thinner, punctures concealed only about basal fourth, antennæ inserted in middle of rostrum, emargination of mesosternal receptacle longer, and abdomen more convex.

*Hab.*—Queensland: Cairns (E. Allen and E. W. Ferguson).

This species should, I think, be treated as an aberrant *Hexymus*, the winged body and consequently longer metasternum are certainly at variance with all the other species of the genus, but it agrees with all the other characters noted in the revision of the genus <sup>(27)</sup>. The stout scales are irregularly distributed, and are more numerous on the elevated parts than elsewhere, but they do not form fascicles, except perhaps on the third interstice. On one specimen there are several small sooty spots on the elytra, but on the others the sooty scales are usually scattered singly. On abrasion the prothorax is seen to be densely covered with small punctures, and with sparser and moderately large deeply-impressed ones; the latter appear as small ones through the clothing, but the former are normally concealed.

(27) Proc. Linn. Soc., N.S.W., 1898, p. 203.

## NOTOCALVICEPS PUNCTIPENNIS, Lea

A specimen from Cairns differs from the description of the type of this species in being slightly larger (10 mm.), and with two small whitish spots slightly before the middle of the elytra (as in *rarus*) instead of near the apex (as on the type).

In the generic description the eyes were noted as finely faceted; this is incorrect. The facets are of moderate size or rather coarse.

## DIAPHOROCIS, n. g.

*Head* rather small but distinct from above; forehead quadrisinuate. Eyes rather small, coarsely faceted, widely separated. Rostrum long, thin, and curved. Antennæ rather thin; scape inserted much closer to base than to apex of rostrum, not half the length of funicle: funicle with two basal joints elongate, none of the others transverse; club subovate. *Prothorax* transverse, sides rounded, base truncate. *Scutellum* absent. *Elytra* not much wider than prothorax, subparallel-sided to near apex. *Pectoral canal* deep and narrow, terminated between middle coxæ. Mesosternal receptacle scarcely raised, rather widely U-shaped, base slightly stouter than sides, emargination feebly transverse; cavernous. Metasternum along middle about half the length of the following segment; episterna very narrow. *Abdomen* rather large, sutures straight and distinct, first segment almost as long as three following combined, second almost as long as two following combined. *Legs* not very long; femora stout, acutely dentate: tibiæ compressed; tarsi rather long and thin. Somewhat depressed, squamose, fasciculate, coarsely punctate.

In many respects close to *Methidrysis* (the forehead, rostrum, and antennæ are practically identical), but without a scutellum and very differently sculptured. *Notocalviceps*, to which, perhaps, it is closer, has also a scutellum and has metasternal episterna distinct throughout. In an (at present M. S.) table of the genera allied to *Poropterus*, it would be associated with *Terporopus*, which has larger eyes, insertion of scape more distant from the base, elytra narrower and deeper, abdomen considerably narrower, and femora thinner, with the hind pair passing apex of elytra. In general appearance the species described below resembles some species of *Omydus* and of *Poropterus*, but from the former the quadrisinuate forehead is at once distinctive, and from the latter the strongly dentate femora.

## DIAPHOROCIS VARIEGATUS, n. sp.

Black; antennæ and tarsi of a rather bright-red. Somewhat irregularly clothed with scales, varying from snowy-white, through ochreous, to black; and from small and closely applied to the derm to stout and suberect.

*Head* with forehead conspicuously quadrisinuate, in front of same punctures concealed; ocular fovea narrow. Rostrum strongly curved, each side behind antennæ dilated towards but notched at base: behind antennæ with coarse concealed punctures, separated by narrow, distinct ridges; in front of same highly polished and sparsely and minutely punctured. *Prothorax* not much wider than long, apex more than half the width of middle; with rather coarse irregular punctures: with an irregular median carina, somewhat dilated in middle. *Elytra* at base not much wider than widest part of prothorax, but distinctly wider than its base, base strongly trisinate; with rows of large round punctures, becoming smaller posteriorly: interstices decidedly narrower than punctures. Two basal segments of *abdomen* with large sparse punctures, apical segment with smaller and denser ones. Length, 5-6 mm.

*Hab.*—Queensland: Toowoomba (Horace W. Brown); Rockhampton (H. W. Cox).

On the prothorax most of the scales are stout, more or less brownish or ochreous, and in places compacted into feeble fascicles, but there are usually a few snowy scales on the disc and sides. On each elytron there is a very conspicuous snowy transverse spot, irregularly extending from the third interstice to the fifth, slightly before the middle, there is also a distinct ochreous fascicle on the third near base; elsewhere there are numerous feeble ochreous or sooty fascicles. On the under-surface the scales are very irregularly distributed, much of the surface being naked. The legs are usually conspicuously ringed.

#### POROPTERUS.

This genus is abundantly represented in Australia, and contains forms that at first appear to belong to several distinct genera. In formerly<sup>(28)</sup> dealing with the genus I considered that all species having the femora either dentate or grooved should be excluded from it. But several species were then allowed to remain in the genus, or were referred to it, whose femora are really dentate, although the teeth, being very small and usually concealed by the clothing (and frequently also by dried mud), they were overlooked till quite recently. The species referred to belong to the *eritiosus* group, and appear to form a natural cluster characterized by the wide flat prothorax, multi-tuberculate elytra with projecting shoulders, absence of scutellum, and by the deep abdominal sutures. The described species of the group are:—

*P. eritiosus*, Pasc. This is the typical species of the group; its femora at first appear to be edentate, but on close

(28) Proc. Linn. Soc., N.S.W., 1897, p. 455.

examination a small tooth on each may be seen, the tooth being the median culmination of a short narrow ridge. In the original description the femora are not mentioned, and the species was stated to have a scutellum. Probably Mr. Pascoe was deceived by some clothing or dirt in the scutellar region.

*P. python*, Pasc. (*listroderes*, Lea). On the type of *listroderes* all the femora have a short ridge that would probably be overlooked unless specially looked for, but the ridges do not culminate in teeth.

*P. bisignatus*, Pasc. I have been unable to find ridges or teeth on any specimen of this species, although it is evidently allied to *exitiosus*.

*P. foveipennis*, Pasc. In this species the femora are not dentate, but they are very conspicuously grooved. I had proposed proposing a new genus for it on this account, but as in most of its characters it appears to be a member of the *exitiosus* group, have refrained from doing so.

*P. variabilis*, Lea. The femora are much as on *exitiosus*, but the teeth and ridges are still more feeble, and on the front pair are sometimes altogether wanting.

*P. humeralis*, Lea. Extremely feeble ridges and feeble teeth are traceable on the four hind femora of this species, but on the front pair the teeth appear to be absent, although a slight swelling on each may be noticed at the position of the tooth.

Two new species of the group may also be noted.

*P. platyderes*, n. sp. The four hind femora each have a subtriangular ridge on tooth that is very distinct from some directions, and only partially concealed by the clothing from the sides; but on the front pair the teeth are less evident. At a glance the species appears to belong to *python*.

*P. latipennis*, n. sp. Feeble ridges are traceable on the femora, but nowhere become angular or dentate.

#### POROPTERUS POSTICALIS, n. sp

Black; antennæ and tarsi more or less red.<sup>(29)</sup> Rather sparsely (more densely on tubercles and legs than elsewhere) clothed with muddy-brown and ashen scales.

*Head* with sparse shallow punctures, except at extreme base, where they are smaller and rather dense. Eyes rather coarsely faceted. Rostrum moderately long, parallel-sided, and with irregular rows of coarse punctures behind antennæ; in front of same somewhat wider, and with denser and smaller punctures. Antennæ inserted one-third from apex of

<sup>(29)</sup> The colours of the derm and appendages are practically identical in this and all the following species.

rostrum; first joint of funicle slightly stouter and slightly shorter than second. *Prothorax* slightly longer than wide, sides strongly rounded; apex produced and concave, with a ridge bounding the concave portion; subapical constriction deep, irregular, and suddenly terminated at ridge; with four rather feeble tubercles placed transversely at middle; with large, round, irregularly-distributed punctures; median carina absent except at extreme base, where it appears as a scutellar lobe. *Scutellum* indistinct or absent. *Elytra* narrow, much deeper than wide, scarcely wider than prothorax; sides with large deep punctures on foveæ, in places connected so as to appear like zig-zag grooves; along middle and on posterior declivity with much smaller punctures; posterior declivity somewhat flattened, almost half the total length of elytra, each side of its summit crowned with a large round tubercle; third interstice at about basal fifth with a rather small round tubercle, a still smaller one close behind it, elsewhere with feeble tubercular swellings; suture and tubercles with small, shining, squamiferous granules. *Meso-sternal receptacle* rather large at the base, walls of emargination thin and widely U-shaped. *Legs* long and thin, third tarsal joint rather wide and deeply bilobed. Length, 6 mm.

*Hab.*—New South Wales: Sydney (A. M. Lea)

The type is probably a male, and is minus its abdomen and hind legs, but it is so distinct that it has been described. It is a narrow deep species, allied to *parvidens* and *ornaticollis*, from both of which it may be distinguished by the large tubercles overhanging the posterior declivity, the declivity itself being unusually long and abrupt; not rounded as in those species. Seen from the sides the elytra appear to have a posterior slope for about half their total length, then an undulated median space, and then a shorter and somewhat concave basal slope. The eyes are quite as coarsely faceted as in *ornaticollis*. As the middle femora extend to the apex of elytra, the hind pair are certain to pass the same.

#### POROPTERUS STENOGASTER, n. sp.

Densely clothed with more or less muddy-brown, setose scales or setæ, becoming fasciculate on tubercles; rostrum in front of antennæ, and parts of under-surface, glabrous.

*Head* with coarse but partially-concealed sculpture. Eyes coarsely faceted. Rostrum moderately long, somewhat suddenly inflated in front of antennæ; with dense punctures, clearly defined on apical third, larger but partially concealed elsewhere. Antennæ inserted one-third from apex of rostrum, first joint of funicle stouter and slightly longer than second. *Prothorax* slightly longer than wide, sides rounded in middle,



apex lightly produced; subapical constriction irregular and terminated before summit; with four fasciculate tubercles across middle; carina partially concealed, but appearing at base as a scutellar lobe; with large, round, irregularly distributed, and often concealed, punctures. *Elytra* narrow and deep, nowhere wider than widest part of prothorax; sides with large deep punctures or foveæ, frequently more or less irregularly conjoined, elsewhere with large punctures but much smaller than on sides; third interstice with an elongate tubercle at basal fifth, a smaller one at basal two-fifths, a large one (somewhat curved outwards) crowning the posterior declivity, an elongated one at apex, and a small one near apex; fifth interstice with two small tubercles; suture tuberculate halfway down posterior declivity, and on basal half with small shining granules. *Mesosternal receptacle* with basal portion rather large; emargination semicircular. *Abdomen* long and parallel-sided almost to apex, first and fifth segments each as long as three median ones combined; second as long as third and fourth combined, with a strong median ridge or elongated tubercle; apical segment convex along middle, with dense clearly-defined punctures. *Legs* long and thin; front femora feebly, the others rather strongly, grooved, hind pair terminated considerably before apex of abdomen; third tarsal joint moderately wide and deeply bilobed. Length, 6 mm.

*Hab.*—Australia (A. Bovie).

A narrow deep species, with coarsely faceted eyes and curious abdomen. It is allied to *parvidens*, *ornaticollis*, and *posticalis*, from all of which it may be distinguished by the sutural tubercle, shorter femora, and long abdomen. The femora appear to be all feebly grooved, but, when viewed from certain directions the grooves on the four hind ones are very distinct. The forehead appears to be trisinate, with a wide sinuous impression before it, but the sculpture is more or less concealed by the clothing. The type is probably a male.

#### POROPTERUS MAGNUS, n. sp.

♂ Moderately densely clothed with ochreous or reddish-brown scales, becoming dense fascicles on tubercles; legs densely clothed.

*Head* without normally visible punctures. Ocular fovea large. Rostrum moderately long and rather stout, sides feebly inflated between base and antennæ, and then dilated to apex; with numerous punctures but more or less concealed behind antennæ. Antennæ inserted one-third from apex of rostrum; two basal joints of funicle subequal in length. *Prothorax* about as long as wide, apex bituberculate; with

four tubercles across middle, the median ones much larger than the outer ones, and semi-double; subapical constriction deep and irregular, at median carina suddenly deflected backwards to tubercle, elsewhere with deep and more or less curved grooves; median carina very distinct, somewhat depressed at apical third. *Scutellum* absent. *Elytra* elongate-ovate; with rows of large deep punctures, larger on sides than elsewhere; second interstice with an elongated fascicular crest, near base, about middle, and at summit of posterior declivity supported by distinct tubercles; fourth interstice with two moderately large and two small fasciculate tubercles, a few feeble ones elsewhere. *Mesosternal receptacle* fairly large and strongly raised; emargination widely transverse. *Abdomen* with dense more or less concealed punctures; first segment not as long as three following combined and scarcely longer than fifth; second, third, and fourth of almost even lengths, their sutures deep. *Legs* long and thin; hind femora just passing apex of elytra; third tarsal joint slightly narrower than second and not deeply bilobed. Length, 15½-20 mm

♀. Differs in being somewhat stouter, in having the rostrum considerably longer and somewhat thinner, with its sides not inflated near base, antennæ inserted less close to apex of rostrum, and legs a trifle shorter.

*Hab.*—Queensland: Cairns district (Macleay Museum, E. Allen, F. P. Dodd, and H. Hacker).<sup>(30)</sup>

A large species, close to *carinicornis* but with median prothoracic carina not overhanging the scutellar region, the tarsi with denser clothing and truly linear<sup>(31)</sup> and without a conspicuous lateral tubercle near shoulder when viewed from above. *Rubus* has more numerous tubercles, is without elongated fascicles on the posterior declivity, and has small conical apical tubercles. *Intermedius* and *idolus* have conjoined tubercles at summit of posterior declivity, different tarsi, etc. The scales composing the fascicles are usually, but not always, darker than the adjacent ones. As with many others of the genus, the whole of the derm, on the spaces between the scales, is closely covered with minute black scales (invisible except on a close examination), giving the surface a somewhat shagreened appearance.

One large specimen differs from the others in having the individual scales much shorter, so that the tubercles and

<sup>(30)</sup> Specimens are in the Australian Museum (K. 12581 of that institution) and in Mr. C. French's collection from the Endeavour River.

<sup>(31)</sup> It would thus be a *Mormosintes*, if the linear tarsi were to be regarded as of generic importance.

ridges appear distinctly as such, rather than as supports for fascicles, and the punctures and grooves are much more conspicuous, although really not larger. The prothoracic carina is not transversely impressed at the apical third, and the minute dermal scales are also greyish, so that the derm between the larger scales does not appear to be everywhere jet-black.

*POROPTERUS BASIPENNIS*, n. sp.

Densely clothed with small ashen - grey (almost stramineous) scales, closely applied to derm; with numerous stout, but similarly coloured, scales, scattered about and becoming fascicles on tubercles, but the fascicles usually with a dark centre; legs, head, and rostrum (almost to tip) densely squamose.

*Head* somewhat depressed, punctures normally concealed. *Rostrum* rather long, parallel-sided from base to antennæ, and then slightly dilated to apex; punctures normally concealed except at apex. *Antennæ* inserted one-third from apex of rostrum; second joint of funicle almost twice the length of first. *Prothorax* longer than wide, sides rounded in middle, apex produced and bifasciculate; with two feeble median tubercles supporting distinct fascicles; subapical constriction deep on sides, but shallow across middle; sides near base deeply grooved. *Scutellum* absent. *Elytra* long, narrow, and deep; sides widest just beyond the middle, and strongly arcuate near apex; with rows of large round punctures, larger and more distinct on the sides than elsewhere; shoulders produced; third interstice conspicuously produced at base, fasciculate at basal fourth, and about the middle; fifth interstice with a feeble fascicle about the middle, and another posteriorly; suture conspicuously fasciculate halfway down the posterior declivity, and apex bifasciculate. *Mesosternal receptacle* raised, basal portion large, emargination semi-circular. *Abdomen* with numerous punctures; basal segment as long as three following combined, intercoxal process conspicuously triangular, suture incurved to middle of apex, second decidedly longer than third and fourth combined, and much longer than fifth. *Legs* long and thin: hind femora not extending to apex of abdomen; third tarsal joint moderately wide and deeply bilobed. Length, 11 mm.

*Hab.*—Queensland: Mount Bellenden-Ker (A. Solari from — Podenzana).

A narrow species with peculiar clothing and otherwise very distinct from all previously described species. The fascicle on the suture is at the same position as on *stenogaster*, but the two species have little else in common. The clothing is so dense that no prothoracic punctures are visible, nor is a

median carina traceable. On the type, which is almost certainly a male, two of the prothoracic, and five of the elytral, fascicles are conspicuously dark in the middle. In favourable lights the derm appears to be covered with similar minute black scales to those of the preceding species.

*POROPTERUS PLATYDERES*, n. sp.

♂. Densely, but in places sparsely, clothed with stout ochreous or light-brown scales, usually closely applied to derm, becoming fasciculate, and usually darker on tubercles; legs, head, and rostrum to antennæ densely clothed.

*Head* somewhat depressed. Rostrum rather short and stout, very feebly curved, parallel-sided to between antennæ, and slightly dilated in front of same; with numerous small but clearly-defined punctures in front, elsewhere larger but more or less concealed. Antennæ rather thin, inserted one-fourth from apex of rostrum; second joint of funicle twice the length of first. *Prothorax* wide and almost flat, basal half almost parallel-sided, thence strongly narrowed to apex, which is conspicuously produced and bifasciculate; median carina absent; subapical constriction feeble. *Scutellum* absent. *Elytra* wide, closely applied to prothorax; with rows of large punctures, more regular but not larger on sides than along middle; base with six tubercles, of which the largest are humeral, third interstice with three fairly large tubercles, one just before and one just after middle, the other just below summit of posterior declivity, fourth interstice with a sub-basal tubercle, at first appearing to be on the third, seventh interstice almost ridged from beyond the middle to near apex; apex obtusely bituberculate, several feeble tubercles elsewhere; about suture with some shining granules. *Mesosternal receptacle* large, emargination strongly transverse. *Abdomen* with numerous more or less concealed punctures; basal segment as long as three following combined; a deep curved groove near base; second segment slightly shorter than fifth, and distinctly shorter than third and fourth combined; sutures deep and straight. *Legs* moderately long; femora rather stout, each with a feeble subapical ridge, culminating in a small but distinct tooth, posterior almost extending to apex of elytra; third tarsal joint wide and deeply bilobed. Length, 9-11 mm.

♀. Differs in having the rostrum longer, thinner, more noticeably dilated to apex, clothed only about extreme base and with smaller but more clearly-defined punctures; antennæ inserted not quite so close to apex of rostrum, and legs slightly shorter.

*Hab.*—New South Wales: Blue Mountains (E. W. Ferguson).

A wide flat species, in general appearance strikingly like *python*, but apex of elytra tuberculate, tubercles on posterior declivity nearer the summit, each shoulder with the outer tubercle the larger instead of the smaller, and the femora somewhat different. The scales very densely clothe the sides of the prothorax; on the elytra a pale irregular stripe of scales appears to extend from the shoulder to the apex, with an inner dilation near the middle, but this appearance is mainly due to the comparative sparseness of scales along the middle.

*POROPTERUS LATIPENNIS*, n. sp.

More or less densely (in places almost glabrous) clothed with scales varying from ashen-grey to sooty, but mostly of a rather light-brown; tubercles usually with dark fascicles; legs densely clothed and feebly ringed.

*Head* wide; punctures normally concealed. Ocular fovea shallow. Rostrum short, stout, and feebly curved, dilated in front of antennæ: apex with dense and clearly-defined punctures. Antennæ rather stout, inserted about one-third from apex of rostrum; second joint of funicle distinctly longer than first. *Prothorax* wide and lightly convex, sides strongly rounded, apically strongly narrowed and produced, apex bifasciculate; median carina absent; subapical constriction feeble. *Scutellum* absent. *Elytra* wide, subcordate; shoulders produced and tuberculiform; with rows of large, deep punctures, becoming smaller posteriorly; each elytron with two fascicles at summit of posterior declivity, one on the second, the other on the third interstice; third with two other fasciculated tubercles, one about middle, the other at basal fourth; fifth interstice with two feeble fascicles; apex feebly bifasciculate, several feeble fascicles elsewhere. *Mesosternal receptacle* large, medio-basal portion triangular owing to a large excavation on each side, apical portion wide; emargination shallow. *Abdomen* with deep sutures; first segment almost as long as three following combined, its apex incurved to middle, near base with a strong curved groove; second shorter than third and fourth combined. *Legs* rather short; femora stout, hind pair extending to tip of elytra; third tarsal joint not very wide. Length, 9 mm.

*Hab.*—Queensland: Little Mulgrave River (H. Hacker).

At a glance apparently close to the following species, but really belonging to the *exitiosus* group. The rostrum of the type is clothed along the sides to the antennæ, but not along the middle, but this may be due to abrasion. Owing to the shape of the receptacle the pectoral canal appears to terminate between the front legs. From some directions the forehead appears to be trisinate, but only the median sinus is at all distinct.

## POROPTERUS TRIFOVEIVENTRIS, n. sp.

Clothed with sooty-brown scales, dense and fasciculate on tubercles, and usually sparse elsewhere; with a short oblique stripe of pale scales, from the third to the seventh interstices, at the apical third of elytra; legs densely clothed with sooty-brown scales, with feeble paler rings; head and rostrum to antennæ densely clothed.

*Head* large; forehead lightly sinuate; punctures normally concealed. Rostrum rather short, stout, and lightly curved; sides distinctly inflated between base and antennæ, and again dilated to apex. Antennæ rather stout, inserted one-third from apex of rostrum; second joint of funicle distinctly longer than first. *Prothorax* about as long as wide, somewhat flattened, sides strongly rounded; across middle with a double series of four very feeble tubercles, supporting fascicles, the median ones of these continued as feeble crests to apex; with rather large, irregularly-distributed punctures; subapical constriction deep and irregular on sides, but not continued across summit. *Scutellum* absent. *Elytra* elongate-ovate; with large punctures becoming smaller posteriorly; second interstice with an interrupted fascicular crest, commencing at summit of posterior declivity, and continued to apex; third with an elongated fascicle near base, another about middle, and a whitish one at summit of posterior declivity; fifth with a fascicle near base; shoulders tuberculate, elsewhere with feeble fascicles. *Mesosternal receptacle* as in preceding species. *Abdomen* with first segment almost as long as three following combined, near base with two large partially-conjoined foveæ, at apex with another fovea common to it and the second segment, suture between these segments deep at the sides, but interrupted on each side of the fovea; second almost as long as third and fourth combined. *Legs* rather short and stout; hind femora not extending to apex of abdomen; tarsi rather narrow. Length,  $8\frac{1}{2}$  mm.

*Hab.*—Queensland: Cairns (H. Hacker).

An aberrant member of the *lithodermus* group. The apical fovea of the first abdominal segment, although common to the two basal segments, is round instead of sulcate, as in *nubeter* and *sulciventris*; the two subbasal foveæ might be regarded as an interrupted groove. In addition to the pale scales, already noted on the elytra, there are a few clusters of similar scales scattered about; there are also some reddish-ochreous ones at the sides, where the prothorax and elytra touch. The punctures along the suture are unusually large and distant, so that, counting from the base, the fifth is at the summit of the posterior declivity. The femora each have a short submedian ridge, but the ridges are not angular or

dentate; to a certain extent they cause the femora to appear to be feebly grooved. The third tarsal joint is longer than wide, and less deeply bilobed than usual; but, as it is slightly wider than the second, the tarsi cannot be regarded as linear. The type appears to be a male.

*POROPTERUS CRASSIPES*, n. sp.

Densely clothed (but in places almost or quite glabrous) with sooty scales, variegated with more or less concealed whitish ones.

*Head* with coarse but more or less concealed punctures. Eyes small and coarsely faceted. Rostrum stout and rather short, sides incurved to middle; with rows of large irregular punctures, becoming much smaller, denser, and not seriate in arrangement in front. Antennæ inserted about two-fifths from apex of rostrum; scape unusually short and stout; first joint of funicle stouter and a trifle longer than second. *Prothorax* almost as long as wide, lightly convex, sides strongly rounded and strongly narrowed to apex, which is produced; with a very obtuse median carina; with four feeble longitudinal fasciculate crests; with numerous large punctures. *Scutellum* absent. *Elytra* rather long, base scarcely wider than base of prothorax, then gently rounded and near apex arcuate; with rows of large punctures, becoming smaller (but still large) posteriorly; third and fifth interstices fasciculate near base, and at summit of posterior declivity, many small fascicles elsewhere. *Meso-sternal receptacle* much as in two preceding species. *Abdomen* with deep sutures; first segment almost as long as three following combined, near base with a strong curved impression and deeply impressed in middle of apex; second about as long as third and fourth combined, with two notches just behind apical fovea of the first; two basal segments with large punctures, the others with dense and much smaller ones. *Legs* short; femora unusually stout, conspicuously grooved, hind pair scarcely extending to apical segment; tarsi with third joint not much wider than second. Length, 5 mm.

*Hab.*—Victorian Alps (H. J. Carter).

Close to *sulciventris*, but smaller and narrower, with somewhat different clothing and elytral punctures considerably smaller and less angular, etc. The grooving of the femora is an aberrant feature in the genus, but they are also grooved in *sulciventris*, and the two species have the deep abdominal sulcus of *rubeter* (a member of the *exitiosus* group). There is a conspicuous but irregular line of whitish scales crowning the posterior declivity, a few at the extreme base of elytra, two or three together on each side of the middle of the prothorax, similar spots close to each eye, and conspicuously variegating the legs.

## POROPTERUS MULTICOLOR, n. sp.

Densely clothed with scales, mostly reddish-ochreous, but varying (usually in small patches) to stramineous and sooty; apical two-thirds of rostrum glabrous.

*Head* with punctures more or less concealed. *Rostrum* rather long and thin, sides distinctly inflated near base, then incurved to antennæ and then feebly dilated to apex; with numerous rather small but clearly-defined punctures on apical half, more or less concealed elsewhere. *Antennæ* inserted slightly nearer apex than base of rostrum; first joint of funicle stouter and slightly longer than second. *Prothorax* about as long as wide, sides strongly rounded; subapical constriction shallow; with dense large punctures. *Scutellum* absent. *Elytra* elongate, base slightly less than widest part of prothorax, sides very feebly rounded; with regular rows of large and somewhat distant punctures, larger and closer together on sides than elsewhere; with many small depressed black fascicles, more numerous on the third and fifth interstices than elsewhere, but absent from suture. *Mesosternal receptacle* scarcely raised, base fairly large, emargination semi-circular. *Abdomen* densely punctate, with deep sutures; basal segment slightly longer than three following combined, second as long as third and fourth combined. *Legs* rather short; femora moderately grooved, the hind pair just passing tip of elytra; front tibiæ distinctly bent inwards; third tarsal joint rather wide and deeply bilobed. Length, 7.7½ mm.

*Hab.*—New South Wales: Blue Mountains and Ourimbah (E. W. Ferguson).<sup>(32)</sup>

A member of the difficult *lithodermus* group, but with femora rather distinctly grooved. The clothing in some respects is like that of *undulatus*, but the elytra are differently sculptured, the fascicles are fewer in number and differently disposed, prothoracic carina less conspicuous and tibiæ different; *cavernosus* is smaller, with different outlines, prothorax with denser clothing, etc.; *bituberculatus* and *lissorhinus* have shining tubercles at base of elytra. The absence of fascicles or dense clothing from the suture on the posterior declivity readily distinguishes it from other members of the group. On the prothorax a median carina appears to be traceable from base to apex, but it is entirely covered by scales. The punctures are also more or less obscured by scales. On the upper-surface the dark scales are mostly condensed into fascicles. In certain lights many of the scales appear almost scarlet. The thin setæ at tips of tibiæ are more or less golden.

<sup>(32)</sup> I have also seen a specimen, in Mr. Cox's collection, from Illawarra.



## POROPTERUS MOLLIS, n. sp

Very densely clothed with large soft scales, varying from ashen-grey to sooty, the latter mostly composing fascicles; apical fourth of rostrum glabrous.

*Head* with normally-concealed punctures. Rostrum moderately long, sides incurved to middle; with dense and coarse punctures, concealed except near apex. Antennæ inserted about one-third from apex of rostrum; first joint of funicle much longer than second. *Prothorax* slightly longer than wide, sides strongly rounded, subapical constriction shallow but continuous; apex with two fascicles, across middle four more, but the median ones semi-double; with dense normally-concealed punctures; with a feeble median remnant of a median carina. *Scutellum* small. *Elytra* elongate or elliptic-ovate; with many fascicles, mostly blackish, more numerous on third and fifth interstices than elsewhere, sometimes appearing as more or less elongated crests, a distinct fascicle on suture beyond the middle; with large punctures more or less concealed, even on sides. *Mesosternal receptacle* feebly raised; emargination strongly transverse. *Abdomen* with numerous but more or less concealed punctures; first segment slightly longer than three following combined, its apex lightly incurved to middle; third and fourth strongly depressed below level of second and fifth, their combined length distinctly shorter than that of either of those segments. *Legs* rather short; hind femora not extending to apical segment; third tarsal joint rather wide and deeply bilobed. Length, 9 mm.

*Hab.*—Tasmania: Hobart (A. M. Lea).

A narrow densely-squamose species of the *antiquus* group. In some respects it is close to *alboscutellaris*, but is narrower and with a fascicle on the suture just before hind declivity; the latter character readily distinguishes it from all other members of the group. Many members of the *lithodermus* group have such a fascicle, but those species are all exscutellate. The type is probably a male.

## POROPTERUS SIMSONI, new name.

I have to propose this name for the species I described as *P. nodosus*, Dr. Ferguson having kindly drawn my attention to the fact that that name had been previously used for a New Guinea species of the genus, originally referred to *Mormosintes*.<sup>(33)</sup>

The type of the species is a male. The female differs in having less of the rostrum squamose, and the antennæ inserted rather more distant from the apex.

(33) Pascoe, Ann. Mus. Civ. Gen., 1885, p. 265.

Mr. Davey has taken the species in South-West Victoria,<sup>(34)</sup> and his specimens are evidently in better condition than the type<sup>(35)</sup> (which by the glossy condition of the granules and tubercles shows evidences of abrasion); their tubercles and even many of the granules being clothed with scales. A male that he sent from Ararat is considerably smaller (10 mm. only), and with the apical tubercles more distinct and subconical.

#### POROPTERUS CONIFER, Boh.

A Dorrigo specimen of this species has the two large subapical tubercles of elytra not diverging, but with their tips touching (probably due to an accident). Its prothorax has the median carina more pronounced, the four tubercles across the middle are larger than on the typical form, but smaller than on the variety *prodigus*. On the elytra the second and third tubercles, on the third interstice, are decidedly smaller than on both forms. At a glance it approaches some of the forms of *ellipticus*.

#### OPHRYTHREOCIS FERRUGINEUS, n. sp.

Black; antennæ and tarsi red. Densely clothed with rusty-brown scales, variegated with sooty ones, and with numerous stout suberect ones scattered about.

*Head* with dense concealed punctures. Eyes latero-frontal and small, but not very prominent. Rostrum rather wide, almost parallel-sided; with coarse concealed punctures almost to apex, which is densely punctured. *Prothorax* rather lightly transverse, sides strongly rounded, apex about half the width of middle; with dense more or less concealed punctures. *Elytra* subcordate, sides distinctly rounded; with rows of large partially-concealed punctures, becoming smaller posteriorly. Third and fourth segments of *abdomen* very short, and distinctly depressed below level of second and fifth. *Femora* stout, very feebly dentate. Length, 3½ mm.

*Hab.*—Victoria: Gippsland (E. W. Ferguson).

On the prothorax all the scales are rather stout and suberect, although shorter than the erect ones on elytra. There are eight spots (two fairly large ones at base, four across middle, and two very feeble ones at apex) where sooty scales are condensed so as to appear like fascicles, although they are not longer than the surrounding rusty-coloured ones. On the elytra there is a rather large spot of sooty erect scales on each side of base, and numerous smaller ones (mostly on the

(34) It is now first recorded from the mainland.

(35) Kindly sent to me for re-examination by Mr. Simson.

even interstices) giving an appearance as of numerous feeble fascicles. The legs are also feebly ringed with sooty scales. The type appears to be a male.

OPHRYTHYREOCIS MICRIPS, n. sp.

Blackish; antennæ and tarsi red. Rather densely clothed with muddy-brown or muddy-grey scales, with some stout suberect ones scattered about, and in places forming feeble fascicles.

*Head* rather convex, and with concealed punctures in front; forehead somewhat sinuous and bald where normally concealed. Eyes latero-frontal, small, and prominent. Rostrum moderately long, somewhat dilated in front of antennæ (which are situated at the apical two-fifths), with a short, shining, impunctate median line, elsewhere with dense and rather coarse punctures, concealed only about extreme base. *Prothorax* moderately transverse, apex more than half the width of middle; punctures dense but concealed. *Elytra* briefly subcordate, base truncate, sides strongly rounded; with rows of moderately large partially-concealed punctures; interstices feebly subtuberculate beneath fascicles. Third and fourth segments of *abdomen* level with fifth, and but slightly depressed below second. *Femora* stout, grooves and teeth extremely feeble. Length,  $2\frac{1}{2}$  mm.

*Hab.*—Australia (A. Bovie).

The erect scales are less numerous than on the other known species, and the fascicles are extremely feeble; of the latter six may be traced on the prothorax, and several across the base and middle of elytra. The type is almost certainly a female.

BÆODONTOCIS, n. g.

*Head* of moderate size, partially concealed from above. Eyes rather small, widely separated, coarsely faceted. Rostrum rather long and thin, moderately curved. Antennæ thin; scape inserted slightly nearer apex than base of rostrum; two basal joints of funicle elongate; club ovate. *Prothorax* transverse, sides rounded, apex produced. *Scutellum* small. *Elytra* with sides rounded to beyond the middle, sides thence arcuate to apex, base trisinate. *Pectoral canal* deep and wide, terminated between middle coxæ. Mesosternal receptacle rather widely U-shaped, feebly raised; cavernous. Metasternum about half the length of the following segment; episterna narrow but traceable throughout. *Abdomen* with two basal segments large, the suture between them incurved to middle, third and fourth combined about the length of second and fifth, and not depressed below them. *Legs* rather long; femora not grooved; tibiæ lightly bisinate.

At first the species described below appears to belong to *Brachyporopterus*,<sup>(36)</sup> from which (and also from *Poropterus*) it is distinguished by its metasternal episterna. At a glance it appears close to *P. montanus*, but the shoulders are very different. The femora are very minutely dentate, and the teeth are concealed by clothing, but even when this has been abraded they are seen with difficulty; but regarding them as dentate the genus would be associated<sup>(37)</sup> with *Anilaus* which has strongly dentate femora, and is otherwise very different. Regarding them as edentate, it would be associated with *Orthoporopterus*, to which it is not at all close. In general it is much like a *Nechyrus*, but the eyes and mesosternal receptacle distinguish it from that genus.

*BÆODONTOCIS MEGAPHOLUS*, n. sp.

Black; antennæ and tarsi obscurely reddish. Densely clothed with large, soft, muddy-brown or muddy-grey scales; with stout suberect ones, condensed into fascicles on upper-surface and thickly distributed on legs.

*Head* with dense normally-concealed punctures. Rostrum as long as prothorax, sides very feebly incurved to middle, with dense and rather small but clearly-defined punctures, smaller and sparser in middle than elsewhere. *Prothorax* moderately transverse, sides strongly rounded, apex more than half the width of middle; with a short distinct median carina, with feeble swellings supporting feeble fascicles; with normally-concealed punctures. *Elytra* not twice as long as wide, shoulders somewhat produced, apex obtusely notched; with rows of very large partially-concealed punctures, third and fifth interstices with feeble tubercular swellings. *Under-surface* with rather small but usually distinct punctures. Length,  $6\frac{1}{4}$ - $6\frac{1}{2}$  mm.

*Hab.*—New South Wales: Dorrigo (H. W. Cox).

On one specimen the metasternal episterna are quite distinct, but on another, owing to a slight displacement of the clothing, they are indistinct. The suture between the two basal segments of abdomen is quite distinct across the middle, although not deeply impressed there. The hind femora, when placed in a line with the sides of the elytra, just pass their tips, but unless so placed appear to be shorter. As the clothing of the rostrum is confined to the extreme base, it is probable that both the typical specimens are females. On the sides of the prothorax the scales are larger than elsewhere.

(36) Near which it should be placed in catalogues.

(37) In a (at present unpublished) table of the allies of *Poropterus*.

On the abdomen the clothing is very sparse and mostly sooty. There is a distinct tubercle on the third interstice about the middle, marking the summit of the posterior declivity, but elsewhere the tubercles are ill-defined.

#### AMORPHOCIS, n. g.

*Head* of moderate size, partially concealed from above; forehead evenly convex. Eyes rather small, widely separated, coarsely faceted. Rostrum wide, lightly curved. Antennæ thin; scape inserted nearer apex than base of rostrum; two basal joints of funicle elongate; club ovate. *Prothorax* transverse, base truncate, sides strongly narrowed to apex; ocular lobes acute. *Scutellum* absent. *Elytra* truncate at base, widest at basal third, thence strongly narrowed to apex. *Pectoral canal* deep and wide, terminated close to front coxæ. Mesosternal receptacle suddenly and strongly elevated, emargination feebly curved, hind margin with a perpendicular median ridge; cavernous. Metasternum about two-thirds the length of the following segment; episterna not traceable. *Abdomen* fairly large, sutures straight, first segment as long as three following combined, these equal *inter se*, fifth moderately long. *Legs* moderately long; femora strongly grooved, tibiæ compressed; tarsi wide, third joint deeply bilobed.

In some respects close to *Zenoporoapterus*, near which, perhaps, it should be placed, but mesosternal receptacle elevated, much as in the allies of *Idotasia*, second segment of abdomen no longer than third, and metasternal episterna concealed. The typical species has curiously sculptured elytra. Its femora, when viewed from in front, appear to be dentate, but when viewed from behind the front ridge of each is seen to be nowhere dentate, but, at the usual position of a femoral tooth, each has a small fascicle of scales. The four hind tibiæ are also peculiarly clothed.

#### AMORPHOCIS MIRUS, n. sp.

Black; upper-surface rather sparsely and irregularly clothed with greyish scales. Abdomen, metasternum, and parts of mesosternum very densely clothed; legs moderately clothed in places, densely in others.

*Head* with dense more or less concealed punctures; ocular fovea fairly large, and less frontal than is usual. Rostrum about twice and one-half as long as greatest width, sides distinctly incurved to middle, deeply notched on each side of base; basal three-fourths with rows of large punctures, separated by feeble ridges; apex with smaller and crowded punctures.

Scape about as long as funicle. *Prothorax* moderately transverse, subconical, apex about one-third the width of base; with rather dense but irregular punctures; with a conspicuous median carina, continued to apex but not to base; with four small tubercles across middle, but the lateral one very feeble, and two small ones on each side of apex. *Elytra* subcordate, not twice as long as greatest width, sides strongly dilated from base to basal third, and then narrowed to apex; with irregular rows of fairly large punctures; before middle with an irregularly transverse (or oblique) row of feeble tubercles, beyond same (except the suture) glabrous and with a few small tubercles. Punctures of *under-surface* concealed. *Femora* with dense punctures, the tibiae with distinct ridges. Length, 5 mm.

*Hab.*—New South Wales: Blue Mountains (E. W. Ferguson).

The antennæ and tarsi are almost as black as the other parts. At the base of each of the four hind tibiae there is a conspicuous ridge of stout scales that, becoming suddenly terminated, causes the tibia itself to appear angularly dentate at its outer base, but the derm is but feebly dilated there. The clothing of the side pieces of the mesosternum cause these to appear like three triangles, of which the median one is darker than the others. The elytra appear to be divided into two parts, the basal and smaller portion partly clothed (near the base part of it is irregularly glabrous) and the apical portion glabrous, but this portion extends irregularly along the sides to the base. The tubercles are small but distinct on the hinder parts, and confined to the third, fifth, and seventh interstices, elsewhere they are less distinct (small granules only), but not confined to those interstices.

#### PSEUDOPOROPTERUS.

Several additional species of this genus having been discovered, the original diagnosis needs amendment as follows:—Eyes with facets of variable size. Scape shorter than funicle, its insertion variable. Abdomen with second segment excavated or not, its suture with first usually indistinct across middle. Legs short or moderately long, hind femora extending to or just passing apex of elytra.

#### PSEUDOPOROPTERUS SULCIFRONS, n. sp.

♂. Black; antennæ and tarsi almost black. Densely clothed with scales of varying shades of brown; with some stout ones scattered about.

*Head* with a conspicuous median groove extending almost to base; punctures concealed. *Rostrum* stout, rather lightly

curved, with dense and coarse punctures, distinct in front but partially concealed behind antennæ. Antennæ rather stout, inserted about two-fifths from apex of rostrum; scape about half the length of funicle and club combined. *Prothorax* slightly longer than wide, base very feebly bisinuate, sides feebly dilated to beyond the middle, and then strongly narrowed; apical portion flattened, semicircular, depressed below, and scarcely half the width of middle; with numerous distinct granules; a vague depression along middle; punctures large, but more or less concealed. *Elytra* very little wider than prothorax and not twice as long; with rows of large more or less concealed punctures, each containing a large scale; interstices more or less uneven, each with a row of distinct granules, nearly all of which have a wide scale. Two basal segments of *abdomen* with large deep punctures, the fifth with denser and smaller ones, third and fourth strongly depressed below level of others, first depressed in middle. *Femora* moderately long, ridged, edentate, rather widely grooved, hind pair extending almost to tip of elytra. Length, 11-13 mm.

♀. Differs in having the rostrum thinner, less curved, with punctures distinct almost to base; scape inserted in middle of rostrum; and basal segment of abdomen flat in middle.

*Hab.*—Queensland: Cooktown (H. W. Brown).

The scales are of three shades of brown: very pale-brown or fawn, covering about half of the surface; chocolate-brown, covering almost as much; and velvety spots of sooty-brown. Of the latter there are eight on prothorax, in two transverse series, the lateral ones rather small and indistinct; the antero-discal ones larger and angular, the others elongate, narrow in front, dilated to and touching base. On each elytron there are three velvety spots on the third interstice (including an elongate one on the posterior declivity) and two postmedian ones on the fifth; the space between these is sometimes clothed with almost white scales. There are also some feeble velvety spots elsewhere, but on some specimens all, or most, of the elytral spots are indistinct. On the prothorax, however, the four discal ones are very distinct. The cephalic punctures are quite concealed, but on abrasion there are seen to be dense and rather small ones, and sparser and much larger ones. What appears to be the sutural interstice on each elytron is narrow, and partly conjoined to the second, with granules only on its basal half (but not about the base itself); the third is also irregular in parts, and it is difficult to decide as to whether an elevation at the base, with crowded granules, should be regarded as belonging to it, or to the second; each shoulder is slightly produced, and has a few granules. Many

of the lateral granules, both on prothorax and elytra, are opaque, and with a small shining centre.

PIATYPOPTERUS FETUS, n. sp.

Sparsely clothed with very fine reddish scales and with rather long and stout reddish ones, rather dense on apical portion of prothorax, and forming feeble fascicles on elytra. Head, rostrum, legs, and apical segments of abdomen moderately densely clothed.

*Head* and rostrum indistinctly punctate, but punctures evidently large. Rostrum stout, curved; apical portion shining and distinctly punctate. Scape inserted two-thirds from apex of rostrum, the length of five following joints combined; of these the second is slightly longer than the first. *Prothorax* subquadrate, flat, walls abruptly vertical, widest slightly in front of middle, sides straight to base, rounded to apex, base strongly bisinuate; lower flanks with a few moderately large punctures, disc impunctate. *Elytra* twice the width of prothorax, widest across shoulders, which are slightly produced laterally, feebly decreasing in width to apical third, thence suddenly arcuate to apex, apex feebly rounded and half the width of prothorax; suture near base with a few small shining granules; base near suture with a few large punctures, becoming small towards sides; flanks strongly inwardly oblique and with three feeble rows of punctures. Posterior *femora* not extending to apex of abdomen. Length,  $8\frac{1}{2}$  mm.

*Hab.*—New South Wales (Macleay Museum).

Very distinct on account of the subquadrate prothorax and wide elytra; these latter if truncated at apical third would be much wider than long. They are proportionately wider than the prothorax than in any other Australian species of the subfamily.

ELÆAGNA NODIPENNIS, n. sp.

Black; antennæ and tarsi obscurely reddish. Densely clothed with sooty scales, in parts with dingy whitish ones.

*Head* with concealed punctures. Rostrum rather short and stout, sides narrowed at antennæ, in front of same with dense and coarse punctures, concealed elsewhere. Antennæ stout; scape inserted two-fifths from apex of rostrum, not half the length of funicle and club combined. *Prothorax* almost as long as wide, sides strongly rounded, apex scarcely half the width of base; with dense, large, round punctures. *Elytra* scarcely twice the length of prothorax and the same width at base, sides feebly diminishing in width from base; with rows of large partially-concealed punctures; with numerous small rounded tubercles, more numerous on the third and



fifth interstices than on the others. *Under-surface* with concealed punctures. Abdomen with second, third, and fourth segments of almost even size. *Legs* rather long; hind femora extending to tip of abdomen. Length, 5 mm.

*Hab.*—Victoria: Birchip (J. C. Goudie, his No. 198).

Readily distinguished from others of the genus by the numerous small tubercles; of these there are nine or ten on the third interstice of each elytron, and seven or eight on the fifth. The upper-surface is clothed with small sooty scales, closely applied to the derm, and giving the same a minutely granulated appearance. In places the scales are concealed by a greyish exudation, and on the prothorax there is a small pale spot on each side of the middle. On the basal flanks of elytra, sterna, basal segment of abdomen, and legs the scales are mostly of a dingy-white, with feeble stains of brown in places. In each prothoracic puncture there is a dark seta.

#### ELÆAGNA SQUAMIBUNDA, Pasc.

Several specimens of this species differ from the normal form in being more or less largely mottled with brown. One specimen, from Carnarvon, has the upper-surface almost entirely dark, except for vague remnants of pale markings on the prothorax, and for three conspicuous spots on the elytra, one on each side at the basal third, and one on the posterior declivity. Its head, rostrum, and hind femora are also mottled with brown. Another specimen, from Tarcoola, has, on the prothorax, four dark rounded spots at the base, and two angular ones at the apex. Each of its elytra has a subquadrate one on the shoulder, and an angular one commencing at the middle, and terminated halfway down the posterior declivity; the suture from the base to the summit of the posterior declivity is of a paler brown, and the knees, base of rostrum, and two spots on head are also of a pale-brown.

I have also seen a mottled specimen in the British Museum collection, from Hermannsburg (Central Australia), and another in Mr. Froggatt's collection, from Hay.

#### BRACHYPOROPTERUS MONTANUS, n. sp.

♂. Black; antennæ and tarsi reddish. Densely clothed with rather large scales of various shades of brown, and in places compacted into fascicles.

*Head* with dense concealed punctures. Rostrum rather long and thin, sides lightly incurved to middle, apical third with dense and rather coarse punctures, elsewhere with coarser but concealed ones. Antennæ rather thin; scape inserted one-third from apex of rostrum, almost the length of funicle.

*Prothorax* lightly tranverse, sides strongly rounded; with rather numerous more or less concealed punctures, but derm nude in small patches; with four fascicles across middle and two smaller ones at apex. Elytra at base very little wider than prothorax, but sides slightly dilated to about the middle, base strongly trisinate; with rows of large partially-concealed punctures, becoming smaller posteriorly; third interstice with an elongated semi-double fascicle on basal fourth, a small one about middle, and a moderately large one crowning the posterior declivity; fifth with five fascicles, including one on shoulder and one halfway down the posterior declivity; some small ones elsewhere, including two at apex; a few small granules on basal portion of suture. *Under-surface* with fairly large but more or less concealed punctures. Basal segment of abdomen depressed along middle. Length, 6-7 mm.

♀. Differs in having the rostrum slightly longer and thinner; punctures smaller and concealed only about base; antennæ inserted not quite as close to apex of rostrum; and basal segment of abdomen convex in middle.

*Hab.*—New South Wales: Blue Mountains (H. W. Brown and E. W. Ferguson).

In general appearance nearer to *apicigriseus* than to *vermiculatus*, but larger, prothoracic sculpture, fascicles, and side pieces of metasternum different, rostrum and antennæ somewhat longer and thinner. etc. In some respects it is much like some species of *Exithius*, but the metasternal episternum on each side is represented by a triangular front piece only; each of these is clothed with paler scales than the surrounding ones, and so appears as a small spot. The facets of the eyes are rather coarse. The majority of the scales are of a muddy-brown or rusty-brown colour. On a rather wide median space on the posterior declivity they are paler than elsewhere, and on each side for a rather large but ill-defined subtriangular space they are rather darker than elsewhere, sometimes almost sooty. The fascicles are supported by tubercular swellings, but on the scales being abraded some of the swellings are seen to be very slight.

#### OUROPOROPTERUS SQUAMIVENTRIS, n. sp.

♂. Black; antennæ and tarsi reddish. Densely clothed with light-brown or fawn-coloured scales; with stout suberect scales interspersed, and in places compacted into fascicles. Abdomen with a large patch of sooty scales.

*Head* wide; punctures concealed; a shallow depression between eyes. Rostrum rather long and not very thin, sides rather strongly dilated to base and less strongly to apex;

basal two-fifths with concealed sculpture, elsewhere with dense and clearly-defined although rather small punctures. Scape inserted just perceptibly nearer base than apex of rostrum, about half the length of funicle and club combined; first joint of funicle slightly shorter than second. *Prothorax* slightly longer than wide, base rather strongly bisinuate, apex rather narrow and with a conspicuous median fascicle; with four feeble swellings, supporting fascicles, across middle; punctures concealed. *Elytra* closely applied to and at base but little wider than prothorax, but distinctly dilated to beyond middle, and then arcuate to apex; with irregular rows of large more or less concealed punctures; third interstice with two large obtuse tubercles: one at basal fourth, the other beyond the middle; second and fifth each with a feeble submedian tubercle, some feeble ones elsewhere, but apices produced as two subconical fasciculated tubercles. *Legs* long; femora lightly but acutely dentate. Length,  $7\frac{1}{2}$ -8 mm.

♀. Differs in being larger ( $8\frac{1}{2}$ -9 mm.), rostrum thinner, clothed only about basal fourth, elsewhere shining (it is sub-opaque in the male) and with minute punctures; the antennæ are inserted a trifle nearer to the base of rostrum, and the abdomen is slightly more convex.

*Hab.*—Queensland: Brisbane (R. Illidge); Darling Downs (C. French); New South Wales: Tweed River, Bulli, and Gosford (H. W. Brown).

Differs from *diurus* in being smaller, in the apex of prothorax produced singly<sup>(38)</sup> instead of bifurcate, apices of elytra more acutely produced, and first joint of funicle slightly shorter than second instead of distinctly longer. The sooty patch on the abdomen covers most of the three apical segments, but at the base of the second one it is encroached upon by three conspicuous triangles of paler scales. On the prothorax and elytra there are sometimes some small spots of sooty scales. From the sides the elytra appear to slope rapidly upwards to about the basal third, and then to more gradually slope downwards to the apex. The seventh interstice, for portion of its length, appears almost like an obtuse carina on some specimens.

#### POROPTERELLUS ABDOMINALIS, n. sp.

Black; antennæ and tarsi of a rather bright-red; tibiae and apical margins of elytra reddish. Clothed with muddy-brown or grey scales.

*Head* bald and without punctures, except for a few rather large ones between eyes. Rostrum short and wide, sides

(38) On one female the apical fascicle of the prothorax is divided down the middle, so as to appear like two narrow, almost conjoined,

lightly incurved to middle; with fairly numerous punctures, small about apex, becoming larger to base. Scape stout, inserted almost in middle of rostrum, about half the length of funicle and club combined. *Prothorax* feebly transverse, disc somewhat flattened; with large punctures, distinct on flanks, partially concealed towards same; a rather large, subquadrate, medio-basal space with smaller punctures than elsewhere; apical half with a feeble median carina. *Elytra* not much longer than wide, about once and one-half the length of *prothorax*, sides strongly rounded; with rows of very large partially-concealed punctures; basal half with some rather large granules. *Metasternum* irregularly excavated in middle. Two basal segments of *abdomen* with large punctures, and with a very large one common to both in middle; fifth with a few rather large punctures. *Femora* stout, rather strongly but obtusely dentate; hind pair extending almost to apex of *abdomen*. Length, 4 mm.

*Hab.*—Queensland: Little Mulgrave River (H. Hacker).

In general appearance the upper-surface is not much like that of *intercoralis*, but the remarkable sculpture of the *abdomen* is almost identical. It differs also from that species in its shorter legs and scape, and stronger femoral teeth. The clothing on the type is probably somewhat abraded, and appears to be mixed with mud. Fascicles may be present on fresh specimens, as on the type there appear to be remnants of same. There is a rather large medio-basal space on the *prothorax* that is shining and without clothing, and is probably normal. The bald, smooth portion of the head has a vague, bluish gloss. The sutural portion of the *elytra* is slightly advanced on to the *prothorax*, so that the base of the latter appears to be evenly curved instead of bisinuate.

#### PACHYPROPTERUS HUMERALIS, n. sp.

♂. Black; antennæ and tarsi reddish. Densely clothed with light-brown scales, variegated with patches of darker ones; with numerous stout suberect scales scattered about, and in places compacted into fascicles.

*Head* with dense partially-concealed punctures; forehead conspicuously quadrisinuate, median carina distinct. Eyes moderately large, with rather small facets. Rostrum rather long and thin, sides feebly incurved in middle; with dense punctures, rather small at apex, becoming larger towards and more or less concealed on basal two-fifths; with a narrow median carina. Antennæ rather thin; scape inserted one-third from apex of rostrum, the length of funicle; second joint of funicle once and one-half the length of first. *Prothorax* moderately transverse, sides strongly rounded, base

strongly bisinuate, with four feeble fascicles across middle: with a feeble concealed median carina; punctures concealed. *Scutellum* small, transverse. *Elytra* subovate, base strongly trisinate, sides dilated to beyond the middle; with rows of large partially-concealed punctures, sides vertical for a space of four interstices; with a small but distinct post-humeral tubercle, with a very obtuse swelling on basal fourth of third interstice, and a shorter one on fourth before the middle; with a few conspicuous granules on suture near base. Mesosternal receptacle with thin U-shaped walls. Basal segment of *abdomen* shallowly depressed in middle. *Legs* rather long; hind femora extending almost to tip of abdomen. Length, 8-8½ mm.

♀. Differs in having the rostrum somewhat thinner, with smaller and sparser punctures, concealed only close to base, antennæ inserted two-fifths from apex of rostrum, and basal segment of abdomen convex.

*Hab.*—Tasmania: Frankford, Waratah, Wilmot.

Differs from *satyrus* in its much smaller size, presence of a scutellum, more conspicuously quadrisinuate forehead, and U-shaped mesosternal receptacle. In general appearance it is fairly close to *Herymus australis*, but the femora are edentate. On the prothorax a vague patch of dark scales is usually traceable on each side of the base, on the elytra there may usually be traced an irregular postmedian fascia of dark scales, and another between it and apex. On one specimen, however, the fascicles are broken up into small vague spots. The tibiae are usually very obscurely banded with light- and dark-brown scales.

#### PALETICUS CONVEXICOLLIS, n. sp.

Black; antennæ and tarsi reddish. Rather densely clothed with scales of a light-brown (sometimes almost golden-brown) colour; interspersed with stout and in places suberect ones, in places forming fascicles.

*Head* with concealed punctures; with a feeble median carina. Rostrum moderately long, sides incurved to middle; basal third with rather coarse partially-concealed punctures, elsewhere shining and with small but clearly-defined ones. Scape inserted slightly nearer apex than base of rostrum, about the length of five following joints combined. *Prothorax* moderately transverse, rather convex, sides strongly rounded, apex scarcely half the width of base; punctures concealed. *Elytra* at base not much wider than prothorax, but dilated to beyond the middle, and then sides arcuate to apex; with irregular rows of large, distant, partially-concealed punctures, becoming small posteriorly; interstices with feeble tubercular

elevations, mostly on the even ones. Basal segment of abdomen with a deep oblique impression on each side near base. *Legs* rather long; femora stout, strongly and acutely dentate, hind ones not extending to apex of abdomen. Length, 10 mm.

*Hab.*—New South Wales: Bulladelah (H. J. Carter).

Nearer to *apicipennis* than to any other described species, but with fascicles on the second and fourth interstices as on others. The stout scales are rather dense on the legs. On the prothorax there are four fascicles across middle, and two at apex. On each elytron there are three on the second interstice, two on the fourth, two or three on the sixth, and a few feeble ones elsewhere. I have not detached the head of the type, but towards the base (which is concealed by the prothorax) it evidently has a somewhat sinuous impression. It has no sutural granules, but this is probably not a constant feature.

PALETICUS BASALIS, n. sp.

Black; antennæ and tarsi red. Densely clothed with light-brown or greyish-brown scales, variegated on the legs and sometimes elsewhere, with still paler scales; with stout scales scattered about, and in places condensed into fascicles.

*Head* in front with concealed punctures and a very feeble median ridge, basal (concealed) portion glabrous, and with a feebly quadrisinuated outline. Rostrum long, sides somewhat narrowed at middle; basal half with coarse more or less concealed punctures, elsewhere shining, and with small distinct ones. Scape inserted slightly nearer apex than base of rostrum, almost the length of funicle; second joint of funicle distinctly longer than first. *Prothorax* with basal two-thirds gently rounded, apex more than half the width of middle; punctures concealed. *Elytra* short, subcordate, base strongly trisinuate, sides obliquely dilated from base, then parallel to about middle, and then narrowed to apex; basal half with irregular rows of very large punctures, becoming small posteriorly; third interstice with a rather large obtuse tubercle at basal third, and a smaller one about middle; fourth with an obtuse elongated swelling about middle; fifth with a small one about middle; sixth with one at basal third, and an obtuse one on shoulder, with rather large shining granules on basal third, or basal half, of suture. Basal segment of abdomen with a deep fovea on each side near base. *Legs* long; femora stout, strongly and acutely dentate, hind ones passing apex of elytra. Length,  $5\frac{1}{2}$ - $6\frac{1}{4}$  mm.

*Hab.*—New South Wales: Dorrigo (H. J. Carter and E. W. Ferguson).

Allied to *cordipennis*, but smaller, with sparser tubercles and different clothing. The clothing is much as on *frontalis*,

but that species has very different elytra. There are five specimens before me, three of which, evidently males, differ from the others in having the rostrum with the coarse punctures more advanced towards the middle of the rostrum, and the antennæ inserted somewhat nearer the apex, the basal segments of abdomen also are somewhat less depressed; but the differences are not very conspicuous. There are six feeble fascicles on the prothorax in the usual positions; on the elytra they crown each tubercle; many of the stouter scales are paler than the others and scattered at random, but they are more numerous on the suture and sides of elytra and on the legs than elsewhere. All the scales, however, appear to be easily abraded, as is the case with most species of the genus. The tubercles about the basal third of elytra are always distinct, but the others are sometimes very obtuse, and appear to be little more than parts of a conjoint swelling.

*PALETICUS SUBEREUS*, Pasc.

A specimen from Dorrigo differs from the normal form in having most of the scales sooty, instead of a rusty-brown. In addition it has a few flavous scales scattered about, and condensed into six small spots on the prothorax.

*PALETICUS CORDIPENNIS*, Pasc.

In the original description of this species the scutellum was not mentioned. But in a redescription and table<sup>(39)</sup> it was mentioned as being distinct. It is certainly present on two specimens now before me, but in the majority of specimens it is either very minute and below the level of the elytra or altogether absent. The subhumeral tubercle also varies, being very distinct on some specimens and feeble on others. On each side of the suture near the base there are usually some highly polished granules, varying in number from one to five, and seldom alike on both sides.

A specimen from Dorrigo is unusually large (10 mm.), with a feeble tubercle on the third interstice on the posterior declivity, a rather conspicuous elongated one on the fifth about the summit of the declivity, and two small ones about the middle of the seventh. It has one shining granule on the right of the suture and two on the left.

*PALETICUS SUBPARALLELUS*, Lea.

A specimen from the Endeavour River evidently belongs to this species, but differs considerably from the type in its

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<sup>(39)</sup> Proc. Linn. Soc., N.S.W., 1898, pp. 211 and 216.

clothing. Its prothorax is densely clothed with spathulate reddish-brown scales, with three transverse, slightly-waved fasciæ of chocolate-brown scales; the first of these is comparatively close to the base, and does not quite extend to the suture; the second is almost exactly median, and the third rather close to the second; the disc is supplied with a few white scales, but these become more numerous towards base and sides, on the posterior declivity they become linear in arrangement; each side of apex is marked by a small but distinct spot of white scales. The under-surface and legs are supplied with whitish scales, the femora, especially the hind ones, being distinctly ringed. The specimen is very beautiful, a most unusual occurrence in the genus.

OMYDAUS ROSTRALIS, n. sp.

Black; antennæ and tarsi of a dingy-red. Moderately and somewhat irregularly clothed with scales, varying from almost white, through ochreous, to sooty. Legs and parts of under-surface densely clothed.

*Head* with coarse partially-concealed punctures. Rostrum moderately long, strongly curved, sides distinctly dilated towards but triangularly notched at base; on basal third with coarse punctures, elsewhere shining and with small clearly-defined ones. Antennæ stouter than usual; scape inserted not much closer to apex than to base of rostrum, and distinctly shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* flat, distinctly transverse, sides feebly rounded to near apex, which is suddenly and strongly narrowed and subtubular; with moderately large punctures, more crowded on sides than disc. *Elytra* flattened, not much wider than prothorax, base strongly trisinuate, subparallel-sided to beyond the middle; with rows of very large deep punctures, becoming smaller posteriorly. *Under-surface* with coarse, but in places more or less concealed punctures. Basal segment of abdomen widely concave. *Femora* stout, widely grooved, front pair moderately, the others feebly, dentate; tibiæ feebly compressed, especially the front pair; with rows of punctures separated by ridges, each with a small subapical tooth in addition to the terminal hook. Length,  $6\frac{1}{2}$  mm.

*Hab.*—Queensland: Bloomfield River (C. French).

In general appearance fairly close to *oblongopunctatus*, but femora with wider and deeper grooves, rostrum conspicuously notched on each side of base, body flatter and punctures smaller. *Subfasciculatus*, which is also a depressed species, is wider, with different punctures, alternate interstices of elytra elevated, etc. *Contractus*, whose rostrum is very similar at the base, is not quite so depressed, prothorax more



noticeably decreasing in width to base, and with distinct impressions. The type is almost certainly a male. Its rostrum is rather wider and more strongly curved, and the antennæ stouter, than usual. On the upper-surface the sooty scales are perhaps in the majority, but owing to their colour they are but little conspicuous. On the under-surface the scales are dense and almost setose in character, on a space occupied by the four front coxæ and the intercoxal parts of the meso- and metasternum. The prothorax is not carinated along middle, but from some directions a feeble median line can be traced. The punctures on the basal two-thirds of elytra are usually truncated at the base and rounded at the apex, so that they have a subconical appearance; towards the sides, however, they are more rounded. The front femora each have a moderately distinct tooth in the usual position, but in addition, between this one and the base, there is a swelling in the form of a very obtuse tooth.

OMYDAUS LONGUS, n. sp.

Black; antennæ and claw joints obscurely reddish.

*Head* coarsely punctured. Rostrum stout, moderately long, strongly curved, somewhat gibbous near base; with coarse punctures throughout. Antennæ rather stout; scape inserted two-fifths from apex of rostrum, distinctly shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* flat, distinctly longer than wide, base strongly bisinuate, hind angles overhanging base of elytra, sides feebly increasing in width from base to near apex, which is suddenly and strongly narrowed; surface uneven and with coarse irregular punctures; with a narrow median carina. *Elytra* narrow, very little wider than prothorax, sides irregularly parallel, base strongly trisinuate, apex widely rounded, with large irregular punctures and irregular interstices. *Under-surface* with more or less concealed punctures. Basal segment of abdomen widely depressed, second very little longer than third. *Femora* stout, hind pair not extending to apex of abdomen. Length, 9 mm.

*Hab.*—New South Wales: Byron Bay (C. Watson); Dorrigo (H. J. Carter).

A narrow roughly-sculptured species with coarse punctures on rostrum even to the apex; it also slightly decreases in width from the antennæ to base, a most unusual character in the subfamily. On the elytra the punctures are concealed, except on the sides, where they are large and round, but on abrasion the others are seen to be very large, suboblong, and in irregular double series, with the alternate interstices irregularly elevated or subtuberculate. The femora are neither

distinctly grooved nor dentate, but from certain directions very feeble ridges are visible along one side of each, and near the subapical notch each ridge is very feebly inflated, or rather suddenly terminated, so as to cause an appearance as of very feeble dentition. These characters, combined with the short second abdominal segment, seem to indicate that the species should be referred to *Omydaus* rather than to *Pseudomydaus*. In appearance it is like a very large *Ps. tenuis*, but that species has the second abdominal segment much larger. Of the species of *Omydaus* it is closest to *impressicollis*, but that species is wider, with different clothing and with moderately distinct femoral teeth and grooves. There are two specimens before me, and both are very dirty, but the abdomen and rostrum are apparently alike in both. On one of them the clothing was evidently rather dense and mostly more or less ochreous, with spots and fascicles of paler scales, more noticeable on posterior declivity than elsewhere; on its elytra there are two oblique fasciæ of sooty scales near the summit of the posterior declivity. Its front tibiæ are straight on the lower edge from near the base to the subapical tooth. The other specimen, in addition to being very dirty, is evidently greatly abraded, but the oblique patches of sooty scales are distinct. Its front tibiæ are trisinate between the base and the subapical tooth, the basal sinus is feeble, the next is slightly more distinct and bounded at each end by a feeble tooth, but the next one is much more distinct. The difference in the tibiæ is possibly sexual.

OMYDAUS NIGROFASCICULATUS, n. sp.

♂. Black; antennæ and tarsi but feebly diluted with red. Irregularly clothed with rusty-brown and sooty scales.

*Head* with a median carina and irregular punctures, forehead quadrisinuate. Rostrum moderately long, distinctly curved, sides dilated towards but deeply notched at base; basal half with coarse punctures, elsewhere shining and with small clearly-defined ones. Scape inserted about two-fifths from apex of rostrum, somewhat shorter than funicle, two basal joints of funicle subequal in length. *Prothorax* about as long as wide, base strongly bisinuate, sides strongly rounded; surface very uneven, and with coarse crowded punctures; with a feeble median carina on apical half. *Elytra* not much wider than prothorax, base strongly trisinate, sides gently rounded; with rows of large deep punctures, becoming small posteriorly; third interstice somewhat raised near base. Basal segment of *abdomen* gently concave, with large punctures. *Femora* stout, strongly dentate; tibiæ with distinct ridges, front pair obtusely dentate about middle, and with a

more distinct tooth near apex, apical hook rather long. Length,  $8\frac{1}{2}$ -9 mm.

♀. Differs in having the rostrum slightly thinner, basal segment of abdomen gently convex, and median tooth of front tibiæ more obtuse.

*Hab.*—Queensland: Kuranda (H. W. Brown).

From the same locality as *parviceps*, but prothorax, elytra, tibiæ, etc., different. In general appearance is close to *fuliginosus*, but the elytral sculpture and clothing very different. From *subfasciculatus*, to which it is perhaps closer, it differs in the curiously curved clothing of the third interstice; the front tibiæ are also somewhat different. The sooty scales are rather sparsely distributed on the upper-surface, but they form a conspicuous fascicle on each elytron on the second interstice at summit of the posterior declivity. On each elytron also the rusty scales form a conspicuous and slightly but distinctly curved line mostly on the third interstice, but commencing at the base of the second row of punctures and ending on the second interstice behind the sooty fascicle. On the prothorax also some of the scales appear to be in feeble lines. On both prothorax and elytra there are a few feeble spots of scales that are ochreous or almost stramineous in colour. The concealed base of the head is nude and densely covered with small punctures. About the apex of the prothorax there is a rather wide shallow impression, appearing double on account of the median carina. The elytral punctures are very large, and each is so impressed that it appears to slope down from apex to base, and the latter to be cavernous, the space between each is shorter than the punctures themselves, so that from some directions these appear to be separated by rows of obtuse granules.

#### PSEUDOMYDAUS TENUIS, Lea.

A specimen from Illawarra differs from the type in being smaller ( $4\frac{3}{4}$  mm.) and with the oblique subapical fascia composed of reddish instead of whitish scales. Its hind legs are drawn forwards so that portions (normally concealed) of the coxæ are exposed, and seen to be densely clothed with ochreous scales.

#### ANOPLOCIS, n. g.

*Head* small but not concealed from above; forehead quadrisinuate. Eyes rather small, coarsely faceted, widely separated. Rostrum rather long and thin. Antennæ rather stout; scape shorter than funicle, inserted about middle of rostrum; two basal joints of funicle moderately long; club subovate, sutures oblique. *Prothorax* about as long as wide, sides rounded, base strongly bisinuate. *Scutellum* indistinct

or absent. *Elytra* not much wider than prothorax, base trisinate. *Pectoral canal* rather wide and deep, terminated between middle coxæ. Mesosternal receptacle U-shaped, walls thin; open. Metasternum much shorter than the following segment; episterna very narrow. *Abdomen* large, sutures deep and straight, first segment as long as three following combined, second distinctly, but not by much, longer than third or fourth. *Legs* rather short and stout; femora edentate, shallowly grooved; tibiæ dilated near apex; tarsi thin but rather short, third joint not much wider than second. Somewhat depressed, coarsely sculptured, and squamose.

In general appearance the species described below is strikingly like an *Omydaus*, near which it should be placed; but the open mesosternal receptacle, edentate femora, and sinuous forehead forbid its being placed in that genus. The type being unique it has not been examined to see if wings are present.

ANOPLOCIS FERRUGINEUS, n. sp.

Black; antennæ and tarsi of a dingy-red. Rather densely clothed.

*Head* with coarse concealed punctures in front: forehead apparently trisinate, but really quadrisinate, with a feeble median carina. Rostrum as long as prothorax, moderately curved, sides feebly dilated from antennæ to near base, but base notched on each side: basal half with coarse concealed punctures and a feeble median ridge; front half with small punctures. *Prothorax* lightly convex; coarsely and somewhat irregularly punctured; with a thin, continuous, median carina. *Elytra* about twice as long as prothorax, irregularly subcordate, widest at about basal fifth; with semi-double rows of very large punctures, becoming smaller and more regular on the sides and posteriorly. Length, 6 mm.

*Hab.*—New South Wales: Comboyne (W. H. Muldoon).

The type (as with so many specimens of the allied genera) has its clothing somewhat obscured by mud; but the majority of the scales are of a bright brick-red, with numerous paler ones scattered about, and the latter forming some spots about summit of posterior declivity (apparently the remnants of a transverse fascia) and on the sides towards base. Probably on specimens in perfect condition both the red and the pale scales form feeble fascicles, at least on the elytra. The base of the prothorax has the incurved parts highly polished, and fitting into each of these is a highly-polished elevated space at the base of the third interstice on each elytron. But it is probable that these polished spaces are normally concealed, as the type has its prothorax and elytra slightly separated. The punctures of the under-surface are mostly concealed, but on

the basal segment of the abdomen there are some large round ones; the apical segment is shallowly bifoveate and apparently densely punctured. The type is probably a male, and to the naked eye appears to be of a rusty-red colour.

DECILAUS INCONSTANS, n. sp

♂. Black; legs (and sometimes the elytra) obscurely diluted with red; antennæ and tarsi of a rather bright-red. Densely clothed with stout sooty scales, but more or less conspicuously variegated with paler ones

*Head* with crowded partially-concealed punctures. *Rostrum* short, stout, base wide, and distinctly notched on each side; with large punctures in irregular series behind antennæ, crowded in front of same. *Scape* short and stout, inserted almost in exact middle of rostrum, scarcely longer than two following joints combined; these subequal in length, but the first wider than the second. *Prothorax* moderately transverse, sides strongly rounded; with dense, round, partially-concealed punctures; with a short, feeble, median carina. *Elytra* with sides moderately rounded, base trisinate and distinctly (although not by much) wider than prothorax, with rows of rather large punctures. *Mesosternal receptacle* elevated and almost truncate in front. *Abdomen* with dense and fairly large but more or less concealed punctures. *Legs* stout; femora feebly grooved; tarsi rather narrow, but third joint deeply bilobed. Length,  $4\frac{1}{2}$ -5 mm.

♀. Differs in having the rostrum slightly longer and thinner, scape inserted near base of rostrum, and abdomen with basal segment flat instead of gently concave. The prothorax is also slightly longer in proportion.

*Hab* —Victoria: Geelong (H. W. Davey), South Australia: Edithburgh and Port Lincoln (H. H. D. Griffith)

Allied to *perditus*, and the rostrum similarly notched at base, but prothoracic scales nearly all thinner and not confined to their containing punctures; abdomen of male more concave, and of female less convex. The punctures are also different. The scales on the elytra are mostly sooty, but are sometimes largely mixed with dingy-brown ones, and usually with a few pale (almost white) ones. On the prothorax the scales are larger than on the elytra, and the sooty ones are less predominant. On one specimen some of the pale prothoracic scales are white and others are almost carmine, especially at the base. On this specimen also the majority of the scales on the under-surface and legs are of a rather bright brick-red, but on most of the specimens the scales there are of a more or less pale-brown. The prothoracic punctures at first appear to be of rather small size for

the genus, but on abrasion they are seen to be fairly large. The large elytral punctures are in rows but not in striæ; they are considerably larger on the male than on the female. The interstices on abrasion are seen to be longitudinally strigose, and with numerous fairly large punctures, often forming a ring around one of the seriate ones; but their finer sculpture is normally quite concealed. They are usually narrower than the punctures in the male, but considerably wider in the female.

DECILAUS VARIEGATUS, n. sp.

♂. Black; antennæ and tarsi of a rather bright-red. Densely clothed with large soft scales, mostly fawn-coloured, but variegated with irregular patches of white and sooty ones.

*Head* with crowded concealed punctures. Rostrum rather stout, sides regularly incurved to middle; punctures concealed except at extreme tip. Scape inserted almost in middle of rostrum, the length of three basal joints of funicle; of these the first joint is slightly longer than the second. *Prothorax* moderately transverse, sides strongly rounded; with dense, round, deep punctures, each normally concealed by its contained scale. *Elytra* briefly cordate, sides rather strongly rounded; with rows of large, partially-concealed punctures, in moderate striæ. *Mesosternal receptacle* strongly elevated like half of a ring. *Abdomen* with dense but normally-concealed punctures. *Femora* stout, lightly grooved and dentate. Length,  $4\frac{1}{2}$ - $5\frac{1}{2}$  mm.

♀. Differs in having the rostrum longer, thinner, and with punctures clearly defined owing to absence of clothing (except at extreme base); scape inserted slightly nearer the base of rostrum; and basal segment of abdomen convex, instead of flat, in middle.

*Hab.*—South Australia: Henley Beach and Myponga (H. H. D. Griffith).

The size and shape are exactly as in *mixtus*, but that species has unarmed femora and very different prothoracic clothing. *Ovatus* has the shape very similar, but the clothing is different; on its prothorax few, if any, of the scales being directed forwards, and on the elytra there are stouter seriate scales amongst the ordinary ones. The femoral teeth are very sharp but small, and liable to be overlooked. The clothing gives the species a peculiarly soft appearance, so that it is the prettiest of all the beach-frequenting species. On the prothorax (where they are all directed forwards) and two basal segments of abdomen the scales are considerably larger than elsewhere. On the elytra the snowy scales are sometimes scattered singly amongst the others, or in small spots about the punctures, but on the basal half they usually form very

irregular patches, sometimes extending across two or three interstices. On the prothorax they usually form a very irregular line on each side. The sooty scales are less numerous than the snowy ones on the elytra, and are more compacted into spots; but on the prothorax they usually occupy most of the disc, except for an irregular line of fawn-coloured ones along the middle. On the under-surface, legs, and head the clothing is less conspicuously variegated than elsewhere. The rostrum is clothed throughout in the male, but only at the sides of the base in the female. The elytral punctures are large, but are so obscured by the clothing that they appear to be much narrower than the interstices, whereas, except posteriorly, they are quite as wide, or wider.

DECILAUS HYSTRICOSUS, n. sp.

♂. Of a dark reddish-brown; antennæ and legs paler. Densely clothed with rather dingy fawn-coloured or muddy-brown scales, in places feebly variegated: with numerous stiff erect setæ scattered about.

*Head* wide; punctures concealed. *Rostrum* short and wide; punctures concealed behind antennæ, but distinct in front of same. *Scape* stout, inserted almost in middle of rostrum, the length of two following joints combined; first joint of funicle dilated to apex, the length of three following combined. *Prothorax* lightly transverse, sides subparallel on basal half, thence coarctate to apex; with dense normally-concealed punctures. *Elytra* very little wider than prothorax, base lightly trisinate, sides feebly rounded to beyond the middle, thence rapidly diminishing in width to apex; with rows of large concealed punctures, in light striæ. *Mesosternal receptacle* like half of an elevated ring. *Abdomen* with dense but more or less concealed punctures. *Femora* stout, moderately grooved and lightly dentate; third tarsal joint wide and deeply bilobed. Length, 3 mm.

♀. Differs in having the rostrum with smaller punctures and clothing terminated before antennæ, scape somewhat thinner, and the basal segment of abdomen more convex.

*Hab.*—New South Wales: Narara (E. W. Ferguson).

In general appearance close to *noctivagus*, but slightly less robust, with more numerous erect setæ scattered about, and rostrum without clothing beyond insertion of antennæ in male. All the femora are dentate, but the teeth are minute and invisible from most directions. On the types there are four vague sooty lines on the prothorax, the setæ (which are stouter and less erect than on the elytra) being almost confined to them. On the elytra there is a feeble, pale (on one specimen almost white) oblique stripe from near each shoulder to near

the suture, just before the middle, so that the two together look like a wide feeble V; there are also even more vague remnants of other fasciæ. The setæ (which are very conspicuous from the sides) are usually of the colour of the scales amongst which they are set. On the legs stiff (and mostly pale) setæ are thickly scattered amongst the scales. The basal joint of the funicle is long, but not thin. The third interstice on each elytron appears to have two feeble swellings, on each of which the erect setæ form a feeble fascicle.

DECILAUD BRYOPHILUS, n. sp

♂. Black; rostrum and legs diluted with red, antennæ and tarsi paler. Densely clothed with brick-red scales, variegated with patches of paler and sooty ones; mesosternal receptacle, metasternum, and two basal segments of abdomen with rather dense, thin, golden setæ.

*Head* with a semicircular space in front densely clothed, but bald elsewhere. Rostrum rather wide, ridged along middle, notched on each side of base; with dense punctures more or less concealed behind antennæ. Antennæ thin; scape inserted one-third from apex of rostrum, slightly shorter than funicle, club rather large. *Prothorax* moderately transverse, sides strongly rounded, apex more than half the width of base, with dense partially-concealed punctures. *Elytra* subcordate, base truncate, closely applied to and no wider than prothorax; sides strongly rounded, widest at about basal third, thence strongly diminishing in width; with rows of large partially-concealed punctures in moderate striæ. *Mesosternal receptacle* rather strongly raised, emargination transverse. *Abdomen* with dense and fairly large but partially-concealed punctures, and forming one regular row across each of the third and fourth segments, basal segment with a shallow depression common to it and to metasternum. *Femora* stout, especially the hind pair, and strongly grooved; third tarsal joint wide and deeply bilobed. Length,  $2\frac{1}{4}$ - $2\frac{1}{2}$  mm.

♀. Differs in having the rostrum longer, with sparser clothing and smaller punctures; clothing of under-surface normal, basal segment of abdomen convex, and prothorax less transverse

*Hab* —Tasmania: Hobart and Mount Wellington, in moss (H. H. D. Griffith and A. M. Lea).

A small prettily-variegated species, with unusually wide hind femora. The prothoracic scales are longer than on the elytra and but feebly variegated, on the elytra there are several small irregular patches of snowy scales, and the suture (except on the basal third, where it is glabrous) has two conspicuous rows of similar scales: there are also small sooty



patches scattered about. On the head there is a pale spot between the eyes; the clothing of the legs is but feebly variegated. The base of the head (concealed when set out but still attached to the body) is quite bald. On both specimens parts of the three lateral interstices of each elytron are glabrous; but this is probably due to rubbing by the femora

DECILAU PARVONIGER, n. sp

Deep shining-black; head, rostrum, legs, and front of prothorax more or less obscurely diluted with red; antennæ and tarsi paler. Sparsely clothed on abdomen, legs, and between eyes, elsewhere almost or quite glabrous.

*Head* with some coarse punctures in front, elsewhere shining and with minute punctures. Eyes separated about half the width of base of rostrum. Rostrum short and stout, sides distinctly incurved to middle; basal half with rows of punctures separated by ridges, apical half with crowded punctures. Scape inserted nearer base than apex of rostrum, much shorter than funicle; club large. *Prothorax* strongly transverse, sides strongly rounded, apex more than half the width of base; base, sides, and apex with fairly large punctures, smooth and impunctate across middle. *Elytra* briefly subcordate, base truncate, sides strongly rounded and widest at about basal third; with rows of not very large punctures, in distinct striæ; interstices wider than striæ. *Mesosternal receptacle* wide and truncate. *Abdomen* irregular; with rather large punctures. *Femora* rather long and strongly grooved, front pair somewhat inflated near base; tibiæ angular, but not inflated at base. Length,  $1\frac{1}{2}$  mm.

*Hab.*—New South Wales: Wollongong, in rotting leaves (A. M. Lea).

A curious minute black species, in size like *mirabilis*, but with very different sculpture. The mesosternal receptacle is decidedly aberrant. The sides of the elytra are rather curiously curved between the middle and apex of each. The first segment of the abdomen is large, concave in middle, and with the intercoxal process wide; the second is short, with its apex almost vertical; the others are short and depressed, the fifth not as long as the third and fourth combined.

DECILAU NIGRONOTATUS, n. sp.

Of a dingy reddish-brown; elytra with blackish spots; antennæ of a rather bright-red, but club black. Clothed with stramineous setæ or thin scales, forming three lines on prothorax, and a spot on each side of scutellar region, but rather sparse elsewhere.

*Head* with rather dense but more or less concealed punctures; base bald and shining. Rostrum rather long and stout, sides lightly incurved to middle; behind antennæ with rather strong punctures in four distinct rows, the two median rows separated by a shining space that dilates considerably in front of antennæ. Scape inserted about one-third from apex of rostrum, slightly shorter than funicle; club large. *Prothorax* strongly transverse, sides strongly rounded, apex more than half the width of base; with dense partially-concealed punctures. *Elytra* subcordate, base truncate, sides strongly rounded and widest across basal third; with rows of large but ill-defined punctures, in moderate striæ; interstices wider than striæ, finely wrinkled, and punctured. *Mesosternal receptacle* like the third of a strongly elevated ring. *Abdomen* with rather coarse punctures on first, second, and fifth segments. *Femora* stout, moderately grooved, and edentate; tibiae angular at outer base. Length,  $1\frac{3}{4}$ -2 mm.

*Hab.*—Tasmania: Mount Wellington, fairly common in moss (H. H. D. Griffith and A. M. Lea).

A small, elliptic, opaque species; much the shape of the preceding one, but somewhat larger and very differently clothed; club conspicuously black, etc. Each elytron has a large dark spot on the side, three spots on the third interstice (but the hind one sometimes missing), and one on the fifth; the latter is sometimes connected from each end with the lateral spot, so as to enclose a rounded reddish space, but it sometimes appears simply as the inner end of the lateral spot. With the head set out its polished base is entirely concealed. The third and fourth segments of abdomen at first appear to be impunctate, but from behind a row of fairly large punctures can be traced across each.

#### DECILAUS NIGRICLAVUS, n. sp.

Of a dingy-red, club black; prothorax and elytra with dark spots. Sparsely clothed with stramineous setæ or thin scales.

*Head* with partially-concealed punctures in front; base bald. Eyes separated about three-fourths the width of rostrum at base. Rostrum moderately long and stout, sides incurved to middle; with four rows of strong punctures behind antennæ, but more crowded and smaller in front. Antennæ much as in preceding species. *Prothorax* strongly transverse, sides strongly rounded; densely and coarsely punctured; with a distinct median carina. *Elytra* sculptured as in preceding species. *Mesosternal receptacle* like half of a strongly-elevated ring. *Abdomen* with coarse punctures, but forming a row across each of the third and fourth

segments; basal segment feebly depressed in middle. *Femora* stout, moderately grooved, and lightly dentate; tibiae subangular at outer base. Length,  $1\frac{3}{4}$  mm.

*Hab.*—Tasmania: Mount Wellington, in rotting leaves (A. M. Lea).

In general appearance very close to the preceding species, with which I had it confused, but femora distinctly, although not strongly, dentate. On each elytron of the type there is an obscure spot on the side, one on the fifth interstice, and another on the third, the three seeming to form a feeble oblique fascia; there are also vague remnants of two others on the third interstice, and of others on the sides of the prothorax. But probably the markings are more or less variable. Its clothing is not condensed into lines on the prothorax, nor into spots at the base of the elytra, but this may be due to partial abrasion.

#### DECILAUS STRIATUS, n. sp.

♂. Black, legs (and sometimes head and rostrum) of a dingy reddish-brown; antennæ and tarsi paler. Clothed with long but rather sparse, stout, yellowish setæ or elongated scales.

*Head* with coarse punctures in front, elsewhere shining and with minute punctures. Eyes separated about two-thirds the width of rostrum at base. Rostrum stout, moderately long; apex shining and minutely punctate, elsewhere with coarse punctures in four series. Scape inserted about two-fifths from apex of rostrum, somewhat shorter than funicle; club large. *Prothorax* moderately transverse, sides strongly rounded; with dense clearly-defined punctures. *Elytra* subcordate, sides strongly rounded and widest across basal third; deeply striated, punctures in striæ conspicuous on sides, but not sharply-defined elsewhere; interstices wider than striæ, with numerous small punctures. *Mesosternal receptacle* like the third of a strongly-elevated ring. *Metasternum* with a thickened impunctate space on each side. *Abdomen* large, with rather dense and large punctures, basal segment with a wide shallow impression, common to it and to metasternum. *Femora* stout, rather strongly grooved, and edentate. Length, 2-2 $\frac{1}{4}$  mm.

♀. Differs in having the rostrum thinner and with smaller punctures, and basal segment of abdomen gently convex.

*Hab.*—Tasmania: Mount Wellington, fairly common in moss (H. H. D. Griffith and A. M. Lea); Waratah (Lea).

Allied to the two preceding species, but black and more elongate, and a greater portion of the head bald, so that

even with the head retracted some of the bald portion is visible. Each of the metasternal episterna appears to be thickened at its suture with the metasternum, so that a fairly conspicuous impunctate ridge appears, between which and the elytron is a fairly distinct row of punctures; as the ridge is without a triangular frontal projection it probably belongs to the metasternum itself. The tips of the prothorax and of the elytra are sometimes diluted with red. On the prothorax there are usually three feeble lines of setæ; on the elytra the clothing is mostly compacted into fairly numerous but feeble fascicles.

DECILAUS SUTURALIS, n. sp.

Black; antennæ and tarsi reddish. Prothorax with sooty varied with greyish and stramineous scales, nearly all elevated above the derm; elytra with dense sooty scales, closely applied to derm, but feebly variegated with pale ones, and with some stiff suberect white and sooty scales scattered about. Under-surface with stiff white or whitish scales; legs with clothing mostly sooty, head in front and basal half of rostrum with stout pale scales

*Head* with coarse partially-concealed punctures; basal part bald. Eyes separated the width of rostrum at base. Rostrum stout, rather short, with dense and coarse punctures, partially concealed but seriate in arrangement behind antennæ, and with a narrow median carina. Scape inserted one-third from apex of rostrum, almost the length of funicle; club large. *Prothorax* moderately transverse, sides strongly rounded, apex about two-thirds the width of base; with dense, deep, and fairly large punctures. *Elytra* rather long, subcordate, sides strongly rounded and widest at basal fourth: with rows of large partially-concealed punctures, in distinct striæ. *Mesosternal receptacle* strongly elevated and rather lightly curved. *Abdomen* with dense partially-concealed punctures, third and fourth segments somewhat depressed. *Femora* stout, strongly grooved, edentate. Length, 2 mm.

*Hab.*—Tasmania: Mount Wellington (type in H. H. D. Griffith's collection).

The size and colour similar to the preceding species, but clothing very different. The ridge at the side of the metasternum is thinner, but being clothed with pale scales is rather more conspicuous. The elytral margins, except in middle, are somewhat thickened and feebly shining. The type appears to have a vague remnant of a median prothoracic carina. As the basal segment of its abdomen is flattened in the middle it is probably a male. The seriate punctures are very distinct

on the sides of the elytra, owing to the scales being sparser there than elsewhere; the basal half of the suture is shining.

DECILAUS ALBONOTATUS, n. sp.

Bright reddish-castaneous; club black. Moderately densely clothed with ochreous scales, variegated with white and sooty.

*Head* rather wide, with concealed punctures on a small semicircular space in front; elsewhere bald and minutely punctate. Eyes separated almost the width of rostrum at base. Rostrum moderately long and rather wide, sides distinctly incurved to middle, with a narrow median carina; with dense punctures, becoming concealed towards base. Scape inserted about two-fifths from apex of rostrum, about the length of the five following joints; club large. *Prothorax* about as long as wide, sides rather strongly rounded, apex more than half the width of base; with dense more or less concealed punctures. *Elytra* subcordate, sides strongly rounded and widest at basal third, with rows of large partially-concealed punctures, in light striæ; interstices wider than striæ; margins shining, and on shoulders thickened. *Mesosternal receptacle* moderately elevated in front; apex semicircular. *Abdomen* with moderately dense punctures. *Femora* stout, rather strongly grooved, and edentate. Length, 2 mm.

*Hab.*—Tasmania: Waratah, in moss (A. M. Lea).

The clothing is very different to that of the preceding species, but somewhat similar to that of *bryophilus*, whose metasternum, however, is very different. The ridge on each side of the metasternum is more distinct than on either of the preceding species; it appears to be narrow and parallel-sided, but with a feeble median curve, between it and the elytron is a partially-concealed row of punctures. The elytral margins are lightly thickened and polished, especially at the base, where the shining portion is about the width of the metasternal ridge. On the elytra the scales are nearly all closely applied to the derm; the white ones clothe the shoulders and form a feeble oblique stripe on each side, from near the shoulder to the suture just beyond the middle, and form a few feeble spots posteriorly. Close behind the stripe there are a few sooty scales; but the disposition of the white and sooty scales differs on the right and left elytra. On the prothorax the scales are longer and stouter, the white ones form a distinct spot on each side, and a few spots on the lower sides. There are a few white scales between the eyes. On the legs and under-surface the scales are subsetose and uniform in colour. The head is conspicuously bald, except for a rather

small frontal space. As the basal segment of its abdomen is moderately convex the type is probably a female.

DECILAUS LATERALIS, n. sp.

Of a dingy reddish-brown, in parts almost black; legs and elytral margins dull-red, antennæ paler. Rather densely clothed.

*Head* with dense punctures, concealed only on a small medio-frontal space. Eyes separated the width of rostrum at base. Rostrum rather short and wide, sides lightly incurved to middle; with coarse and dense punctures, partially concealed towards base. Antennæ much as in *suturalis*. *Prothorax* moderately transverse, sides strongly rounded, apex more than half the width of base; with crowded partially-concealed punctures. *Elytra* subcordate, sides strongly rounded and widest near base, margins shining, near apex strongly thickened, and near base very strongly thickened; with rows of partially-concealed punctures. *Mesosternal receptacle* like one-third of a moderately elevated ring. *Abdomen* with dense more or less concealed punctures. *Femora* stout, strongly grooved, and edentate. Length, 2 mm.

*Hab.*—Tasmania: Mount Wellington (type in H. H. D. Griffith's collection).

Allied to the three preceding species, but with the curious metasternal ridges and polished sides of elytra reaching the maximum. Each ridge slightly dilates from its hind to its front end, but the latter is not triangularly produced inwards; it is gently curved, with the convex side near the elytra (in the preceding species the reverse is the case), and it is rather densely clothed. The margins of the elytra are conspicuously polished and thickened, especially at the base, where they appear to be curved backwards so as to be quite distinct when viewed from above. The clothing of the under-surface is peculiar, but probably varies sexually; the type is almost certainly a male. On the elytra the scales are closely applied to the derm and are ochreous, variegated with white, and with stout suberect ones scattered about; on the prothorax the scales are also ochreous and white, but the latter form three fairly distinct lines. On the under-surface the clothing mostly consists of elongate silvery setæ, which are denser and more conspicuous on the metasternum and two basal segments of abdomen than elsewhere. The punctures on the bald portion of the head are very distinct, although not very large.

DECILAUS LONGIROSTRIS, n. sp.

Of a dingy-red, in places blackish; antennæ of a rather pale-red. Densely clothed with rounded scales, varying from

a very pale-fawn colour to sooty; with numerous stout scales scattered about, and in places compacted into fascicles.

*Head* with numerous and mostly-concealed punctures; with a feeble medio-basal ridge. *Rostrum* long and thin, sides lightly incurved to middle; with rather dense and not very small punctures, more or less concealed on basal third. *Antennæ* thin; *scape* inserted two-fifths from apex of *rostrum*, the length of *funicle*; second joint of *funicle* distinctly longer than first. *Prothorax* moderately transverse, sides strongly rounded, base bisinuate and more than twice the width of *prothorax*; with a very feeble median ridge. *Elytra* rather short, sides dilated to beyond the middle, base trisinuate, median sinus small, the others large, shoulders clasping *prothorax*; with rows of large round punctures, becoming smaller posteriorly; interstices not separately convex, with feeble swellings supporting fascicles. *Legs* rather short; femora stout, moderately dentate. Length, 9 mm.

*Hab.*—New South Wales: Ebor (R. J. Tillyard).

In general appearance strikingly close to the variety A of *Poropterus rubeter*, but *rostrum* much longer and thinner, abdomen not sulcate, and femora dentate. The long *rostrum* (it is distinctly longer than the *prothorax*) seems as much out of place in *Declaus* as in *Poropterus*, but it has been referred to the former on account of its femoral armature. The outlines of the upper-surface are much as in *D. auricomus* and *D. bifurcatus*. The dark parts of the derm are a rather wide median space on the *prothorax*; and on the *elytra* a rather wide medio-basal space, narrowed at the basal third, and then dilated so as to extend to about six interstices from the suture. The *rostrum* is black, but diluted with red in front. The type is evidently in perfect condition, but it is probable that the derm on other specimens will be almost or entirely black. As the basal segment of its abdomen is gently convex in the middle, it is probably a female. On the upper-surface the darker parts are mostly clothed with dark scales, and the paler parts with pale scales, so that these parts are quite distinct to the naked eye. Many of the paler scales on the *elytra* have a faintly opalescent gloss. On the *prothorax* the stout scales are numerous about the apex, and form four feeble fascicles across middle. On the *elytra* they form feeble fascicles on the third and fifth interstices, and are numerous at the apex, and on the seventh interstice, and on the apical third of suture. On the abdomen and legs the pale and dark-brown scales appear to be mixed together in small spots. The *prothorax* has not been abraded, but portions of its derm are normally visible, and are without punctures.

## DECILAUS AURICOMUS, Lea.

Var. *victoriensis*. Mr. H. W. Davey has taken sexes of a species from the Western District of Victoria that appear to represent another variety of *auricomus*. In colour the male agrees with the variety *insularis*, but it differs from that variety and from the typical form in having the prothoracic punctures considerably larger. Its female differs from its male in having the golden clothing of the under-surface replaced by stout (stouter on abdomen than on the metasternum), depressed, white scales; the two basal segments of abdomen convex and the rostrum thinner, with smaller but more clearly-defined punctures, and clothed only at extreme base and in the sub-lateral sulci.

Var. (?) *tasmaniensis*. A specimen from Hobart probably represents another variety. Its colour and the clothing of its upper-surface are much as in the variety *insularis*. It appears to be a female, as its rostrum is as in the above-noted female, but it differs decidedly from both sexes of that variety in the clothing of two basal segments of abdomen; the scales there are thin, elongate, and decumbent; on the metasternum they are still thinner, although far from being hair-like, as in the males.

## DECILAUS CUNICULOSUS, Lea.

Mr. Davey has taken sexes of this species in the Western District of Victoria. The female differs from the male (type) in having the rostrum slightly longer and thinner, with smaller and sparser but more clearly-defined punctures, the legs slightly shorter, and basal segment of abdomen less concave.

## DECILAUS PERDITUS, Pasc.

In this species the rostrum is triangularly notched on each side of the base, but the notches are normally more or less concealed by clothing. On examination from the under-surface, however, they are very distinct. Several other species (*litoralis*, *ovatus*, and *sobrinus*) have similar but less distinct notches. Mr. Pascoe recorded the species from Western Australia and Victoria; it also occurs in Tasmania (Ulverstone) and South Australia (Henley Beach and Edithburgh).

Eight specimens, taken at roots of beach-growing plants near Sydney, are entirely without white scales, the brownish ones nowhere condensed into spots or fasciæ, and (except on prothorax) nowhere distinct.

A specimen from Ocean Grove (Victoria) possibly belongs to the species, but its mesosternal receptacle is almost V-shaped and almost open, its hind margin being no thicker than the sides; in fact, not as thick as the apices. This is possibly an



abnormality, or due to an accident, but on the specimen it has every appearance of being natural.

*ROPTOPERUS FULIGINEUS*, n. sp

♂. Black: antennæ and tarsi red. Densely clothed with scales, usually of a muddy-brown colour, but sometimes sooty: on elytra, and sometimes on prothorax, variegated with spots of paler scales. Under-surface usually with paler scales than on upper-surface. Femora and tibiæ more or less distinctly ringed. Upper-surface with numerous fascicles

*Head* densely clothed in front; forehead bald and shining. Rostrum feebly curved, rather wide at base, sides lightly incurved to middle: behind antennæ with coarse concealed punctures, and a feeble median carina; in front of same shining, and with minute punctures. Scape short, inserted slightly nearer base than apex of rostrum. *Prothorax* almost as long as wide, sides moderately rounded: with rather large and round, but usually concealed, punctures. *Elytra* strongly trisinate at base, sides moderately rounded, and widest just before middle: with large partially-concealed punctures; interstices with feeble tubercular swellings, supporting fascicles; of these there are three on the third interstice, four on the fifth, three on the seventh, and a few feeble ones elsewhere. *Under-surface* with large partially-concealed punctures; basal segment of abdomen widely depressed in middle, the second flat. Length,  $3\frac{1}{2}$ –4 mm.

♀. Differs in having less of the rostrum clothed and the two basal segments of abdomen convex.

*Hab.*—Tasmania: Epping Forest, Mount Wellington (H. H. D. Griffith): Ulverstone, Stanley (including summit of "Nut"); Waratah (A. M. Lea).

Close to *tasmaniensis*, but with more of the head bald and with a distinct pale spot on the middle of each elytron, and one on each side; that species also has two fascicles crowning the posterior declivity considerably larger than any others, and usually paler. On the present species the fascicles there are no larger than several of the others. The rostrum and under-surface are sometimes quite as black as the other parts, but are usually obscurely diluted with red. On the prothorax there are ten fascicles; two very feeble ones at apex and eight loose ones in two transverse series, the four median ones are sometimes paler than the lateral ones. On the elytra the fascicles are more conspicuous and are frequently composed of sooty scales. In addition to the fascicles there are many erect scales scattered about. The under-surface is densely clothed, and in addition each of the large punctures contains a stout

seta. The extreme base of the head has some scale-filled punctures, but these are concealed until the head has been detached from the body.

*ROPTOPERUS BASALIS*, n. sp.

♂. Black; antennæ and tarsi red. Densely clothed with muddy-brown scales; with numerous fascicles on upper-surface.

*Head* with derm concealed, except on a narrow, bald, basal space. Rostrum lightly curved, rather stout, sides lightly incurved to middle; with concealed sculpture, except on apical two-fifths, which are shining and with small but distinct punctures. Scape short, inserted slightly nearer base than apex of rostrum. *Prothorax* moderately transverse, base strongly bisinuate, sides moderately rounded; punctures normally concealed; with ten very feeble swellings supporting feeble fascicles. *Elytra* with sides moderately rounded, base strongly trisinuate; with rows of large more or less concealed punctures; interstices with feeble swellings, supporting fascicles, of these there are four on the third interstice, three on the fifth, four on the seventh, and one on the suture on the posterior declivity, some smaller ones elsewhere. *Under-surface* with dense punctures, and with larger and sparser ones, but all more or less concealed before abrasion. Basal segment of abdomen feebly depressed in middle, the second flat. Length,  $4\frac{1}{2}$ -5 mm.

*Hab.*—New South Wales: Mount Kosciusko (H. J. Carter).

In general appearance much like the preceding and several other species, but with a fascicle on the suture. Seen from in front the base of the elytra appears to have four conspicuous, shining, subtriangular processes, these being on the third interstices and shoulders, and due to the tubercles there being glabrous internally. From behind they are much less conspicuous.

*ROPTOPERUS LONGUS*, n. sp.

Black, somewhat shining; head, rostrum, and under-surface more or less distinctly diluted with red; antennæ and tarsi paler. Upper-surface with stout setæ scattered about, and in places formed into fascicles, these on the posterior portion of the elytra are mostly sooty, but elsewhere they are paler. Under-surface and legs with rather dense scales in addition to the setæ.

*Head* with coarse punctures in front, then bald and shining. Rostrum wide at base, narrowed to, and parallel-sided in front of antennæ; about base with somewhat coarser punctures than on head, elsewhere shining and with minute

punctures. Scape short, inserted distinctly nearer base than apex of rostrum. *Prothorax* quite as long as wide, sides moderately rounded, surface somewhat uneven; with dense, round, clearly-defined punctures. *Elytra* strongly trisinate at base, with shoulders clasping prothorax, sides oblique to middle and then subarcuate to apex; with rows of rather shallow punctures; with feeble tubercular swellings supporting fascicles. *Under-surface* with punctures normally concealed. Two basal segments of abdomen almost flat in middle. Length,  $4\frac{1}{4}$ - $4\frac{1}{2}$  mm.

*Hab.*—Tasmania: Waratah (A. M. Lea).

A very distinct species. The almost entire absence of clothing (other than setæ) from the upper-surface is apparently natural, as the two typical specimens (whose sex is doubtful) are alike in this respect. The highly-polished space causes the head to look as if a polished cap had been drawn over portion of it. The elytra are so shaped, and the fascicles so placed, as to cause the posterior declivity to appear to commence quite close to the base. On each elytron there is an oblique row of feeble, subconnected, pale fascicles, commencing on the third interstice at the basal fourth, and ending on the seventh at its middle; from this one there is an oblique row of sooty fascicles, one on the fifth, one on the third, and a very feeble one on suture at about one-fourth from the apex. On the two elytra, therefore, these fascicles appear to mark the sides of a diagonally placed square; but there is also a feeble fascicle on the middle of the third interstice.

#### ROPTOPERUS BRYOPHILUS, n. sp.

♂. Blackish; head and rostrum of a dingy red; antennæ and tarsi paler. Densely clothed with muddy-brown scales, somewhat variegated on elytra; under-surface with paler clothing. Upper-surface with numerous fascicles.

*Head* densely squamose in front, elsewhere bald and shining. Rostrum wide at base, sides narrowed to, and parallel-sided in front of antennæ; basal third with coarse concealed sculpture, elsewhere shining and with minute punctures. Scape short, inserted somewhat nearer base than apex of rostrum. *Prothorax* about as long as wide, sides moderately rounded; surface uneven and with normally-concealed punctures. *Elytra* not very long, base strongly trisinate, sides moderately rounded; punctures normally concealed; third, fifth, and seventh interstices with distinct fascicles. *Under-surface* with large partially-concealed punctures. Mesosternal receptacle feebly raised, walls thin and U-shaped, feebly cavernous. Basal segment of abdomen gently depressed in middle, the second flat. Length,  $2\frac{3}{4}$  mm.

♀. Differs in having less of the rostrum clothed and two basal segments of abdomen gently convex

*Hab.*—Tasmania: Waratah, in moss (A. M. Lea).

The U-shaped mesosternal receptacle, with thin walls throughout, is at variance with the genus, but as it is not supported by other characters it was considered better to refer the species to *Roptoperus* rather than to a new genus. It is the smallest one yet described. On the female there is a feeble pale spot on the middle of each elytron, and a still more feeble medio-lateral one, but on the male these are not traceable.

*ROPTOPERUS PALLIDICORNIS*, n. sp.

♂. Blackish; head, rostrum, legs, and under-surface of a more or less dingy-red; antennæ almost flavous. Upper-surface with stout setæ or scales scattered about, and compacted into numerous fascicles.

*Head* largely bald; with coarse punctures in front. Rostrum very wide at base, strongly narrowed to, and parallel-sided in front of antennæ; basal third with coarse concealed punctures and a feeble median carina, elsewhere shining and with minute punctures. Scape short, inserted much nearer base than apex of rostrum. *Prothorax* about as long as wide, sides strongly rounded, disc rather strongly convex; with dense and coarse punctures. *Elytra* subcordate, base almost truncate, and narrowly elevated, except at suture and shoulders, sides suddenly and strongly rounded to beyond the middle; with rows of fairly large punctures, in distinct striæ; third and fifth interstices with feeble swellings supporting fascicles. Basal segment of *abdomen* distinctly concave, with a curved row of large punctures; second segment with large irregular ones in middle, the other segments with small ones. Length, 3 mm.

*Hab.*—Queensland: Little Mulgrave River (H. Hacker).

More of the head is bald than in *scutellaris* and *terræ-reginæ*; the bald space is marked off from the base by an impressed line, but until the head is detached from the body this line is concealed. On the upper-surface most of the derm is visible, but not to the same extent as in *longus*. The abdomen of the type is almost entirely glabrous, but this may be due to abrasion. The elytra at the extreme base are no wider than the base of the prothorax, but the sides are strongly rounded, so that at their greatest width they are fully once and one-half as wide.

*ROPTOPERUS TERRÆ-REGINÆ*, Lea.

The base of the elytra of this species is narrowly raised and shining (on the type this was concealed by gum). On

abrasion rather wide striæ, containing oblong punctures, become visible. With the rostrum in its canal (the usual position of unset *Cryptorhynchides*) the highly-polished base of head appears as a narrow rim touching the prothorax; with the head set out but still attached to the body the polished space disappears.

The female differs from the male in having the two basal segments of abdomen decidedly convex, the rostrum longer and thinner, and with its clothing confined to the basal third.

### EXITHIUS.

The following new species of this genus may, for the sake of convenience, be divided into four groups based on the presence or absence of a scutellum or of femoral teeth.

1. *Scutellum distinct, femora dentate.*
2. *Scutellum indistinct or absent, femora dentate.*
3. *Scutellum distinct, femora edentate.*
4. *Scutellum indistinct or absent, femora edentate.*

The head when at rest has its base quite concealed, but the basal punctures are often of use in distinguishing species. The base is always evenly convex, but it is frequently marked off from the front by a more or less distinct depression, frequently with a trisinate outline. With the head attached to the body but extended in front of the usual "set" condition, the boundary line of the forehead is concealed under the overlapping prothorax.

### Group 1.

#### EXITHIUS BASIPENNIS, n. sp.

♂. Blackish-brown; antennæ and tarsi reddish. Densely clothed with large soft scales, mostly fawn-coloured, but varying from white to sooty; under-surface, legs, head, and base of rostrum with less variegated scales. Prothorax with six fascicles; elytra with fascicles on third and fifth interstices.

*Head* gently convex; with dense normally-concealed punctures. *Rostrum* rather wide, sides distinctly incurved to middle; with dense and rather coarse punctures concealed on basal half. *Scape* inserted about two-fifths from apex of rostrum. *Prothorax* lightly transverse; with dense normally-concealed punctures. *Scutellum* small and transverse, but distinct. *Elytra* at base not much wider than prothorax, sides rounded, near apex strongly narrowed; base with tubercles or large elongated granules, and a few smaller ones on suture; third and fifth interstices with feeble tubercular swellings

supporting the fascicles; with large, oblong, but normally-concealed punctures. *Metasternal episterna* distinct in front, but very narrow behind. Four hind *femora* rather strongly dentate, the others very feebly so. Length, 4½-5 mm.

♀. Differs in having the rostrum slightly longer, with smaller punctures, less of the base clothed, and antennæ inserted slightly nearer the middle, and basal segment of abdomen evenly convex instead of flat in middle.

*Hab.*—Tasmania (Aug. Simson, his No. 3776): Stonor; Frankford, on stumps and fence-tops at night (A. M. Lea).

Resembles to a certain extent some of the varieties of *conspiciendus*, but the scutellum is smaller, shoulders different, and posterior declivity longer. There is a rather large patch of whitish scales at the base of the prothorax, usually very conspicuous, but occasionally traceable with difficulty; it is usually circular in outline, but sometimes is extended forward on each side to meet the median fascicles. There is also an oblique, but seldom distinct, line of white scales from each shoulder. The sutural portion of the posterior declivity is clothed with rather pale scales, enhanced by a subtriangular velvety patch of dark ones on each side about the apex. The prothoracic fascicles are loosely formed and in the usual positions, the elytral ones are more or less elongate, and are seldom distinctly terminated. The tubercles or large granules at the base of the elytra are always distinct, and are sometimes of a rather bright-red, although usually darker. On abrasion the elytral punctures are seen to be quite large, and fully as wide as the interstices, but normally they are almost or quite concealed.

#### EXITHIUS CYCLOTHYREUS, n. sp.

♂. Black; antennæ dull-red. Densely clothed with large, soft, round scales, mostly fawn-coloured, but varying from white to sooty.

*Head* evenly convex; with dense punctures, moderately large in front of antennæ, becoming larger towards and concealed on basal third. *Scape* inserted one-third from apex of rostrum. *Prothorax* rather strongly transverse, sides strongly rounded; with dense, round, partially-concealed punctures. *Scutellum* round and distinct. *Elytra* at base suddenly but not much wider than prothorax, widest almost in middle, sides thence gently arcuate to apex; with rows of large partially-concealed punctures; alternate interstices very feebly elevated. *Metasternal episterna* narrow but distinct throughout. *Femora* acutely dentate. Length, 4-4½ mm.

♀. Differs in having the rostrum slightly longer and thinner, with sparser and smaller punctures and less of base clothed; antennæ inserted not quite so close to apex, and basal

segment of abdomen evenly convex, instead of gently concave in middle

*Hab.*—Tasmania (Aug. Simson, his No. 3375): Frankford; Ulverstone: Mount Wellington (A. M. Lea).

In appearance fairly close to the typical form of *conspiciendus*, but head evenly convex; *fumatus* is larger, with less conspicuous scutellum, smaller femoral teeth, and different clothing. The white or whitish scales, which as a rule are larger than the others, cause the surface to appear somewhat greyish. They are nowhere, except on scutellum, in distinct patches, but are rather more numerous across middle of prothorax and beyond middle of elytra than elsewhere; they also form feeble femoral rings. The sooty scales usually form several very feeble spots on the posterior declivity. The tarsi are sometimes almost black, and sometimes scarcely darker than the antennæ.

EXITHIUS TRISINUATUS, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with sooty scales, on the under-surface and legs feebly variegated with whitish ones: elytra with a conspicuous transverse patch of white scales at summit of posterior declivity; scutellum with ochreous scales. Prothorax with six fascicles, elytra with many.

*Head* with the forehead conspicuously trisinate; with very dense punctures, concealed in front. Rostrum moderately stout, sides moderately incurved to middle; with dense and rather coarse punctures, concealed about base. Scape inserted in middle of rostrum, scarcely longer than the two following joints combined. *Prothorax* moderately transverse, sides strongly rounded; with dense normally-concealed punctures. *Scutellum* round and distinct. *Elytra* short, sides rather strongly rounded, base trisinate; with rows of large almost entirely-concealed punctures; alternate interstices with feeble tubercles supporting fascicles; suture with a few granules near base. *Mesosternal receptacle* rather strongly elevated. *Metasternal episterna* rather narrow in front, and not continued to apex. *Femora* strongly dentate; front tibiæ bent downwards in middle, the others subfalcate. Length, 5 mm.

*Hab.*—Tasmania (A. M. Lea).

In appearance something like a variety of *conspiciendus*, but femora much more strongly dentate and front tibiæ different. The conspicuous white patch on the elytra should be very distinctive. As the basal segment of its abdomen is flat in the middle, the type is probably a male.

## Group 2.

## EXITHIUS ATHYREUS, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with large soft scales, mostly fawn-coloured, but largely mixed with black. Prothorax with six fascicles, elytra with many.

*Head* with forehead marked off by a somewhat sinuous depression, the depression interrupted by a short median ridge; with dense punctures, partially concealed in front. *Rostrum* moderately stout, sides distinctly incurved to middle, strongly notched on each side of base; behind antennæ with large partially-concealed punctures, in front of same with smaller clearly-defined ones, and a few minute ones interspersed. *Scape* rather stout, inserted almost in middle of rostrum. *Prothorax* moderately transverse, sides strongly rounded, apex half the width of middle; with rather large partially-concealed punctures; with a short and very feeble median carina or impunctate line. *Scutellum* absent. *Elytra* stout, sides irregularly rounded, base trisinate; with rows of large, deep punctures, becoming smaller posteriorly and partially concealed in places; suture with depressed granules on basal half, second to seventh interstices with feeble tubercles supporting distinct fascicles. *Metasternal episterna* very narrow, but frontal triangle distinct. Basal segment of abdomen flat in middle, each side of base with an irregular impression, its suture with second conspicuously curved in middle. *Femora* stout, strongly dentate; tibiae bent downwards in middle. Length,  $6\frac{1}{2}$ - $6\frac{3}{4}$  mm.

*Hab.*—New South Wales: Blue Mountains (E. W. Ferguson).

In appearance close to a large variety of *fumatus*, but head depressed near forehead, and base of rostrum more conspicuously notched on each side (on most specimens of *fumatus* the notches are either not present or are almost concealed by clothing, and only visible from behind). On the elytra there are several feeble transverse patches of whitish scales; the abdomen is almost entirely clothed with sooty scales, and on the prothorax they are in the majority. On the head the scales are dingy, but feebly variegated. The club is somewhat darker than the rest of the antennæ. The suture and the lateral interstices are the only ones without fascicles. The two typical specimens are probably males.

## EXITHIUS INTERMIXTUS, n. sp.

Blackish; antennæ and tarsi reddish. Densely clothed with large soft scales, varying from whitish to sooty. Prothorax with six feeble fascicles, elytra with many.

*Head* evenly convex; with very dense punctures, larger



and partially concealed in front. Rostrum rather long and thin, sides very feebly incurved to middle, shallowly notched on each side of base; with dense clearly-defined punctures of moderate size, becoming larger towards and partially concealed on basal third. Scape inserted about three-sevenths from apex of rostrum. *Prothorax* rather lightly transverse, sides strongly rounded, apex about half the width of base; with dense, round, partially-concealed punctures; with a feeble impunctate median line. *Elytra* robust, sides moderately rounded, base trisinate; with rows of large, sub-oblong, partially-concealed punctures; second to seventh interstices with feeble tubercles, supporting feeble or moderate fascicles; a few granules about scutellar region. *Mesosternal receptacle* feebly elevated. *Metasternal episterna* rather wide. *Femora* stout, four posterior strongly, the others rather feebly dentate. Length,  $7\frac{1}{2}$  mm.

*Hab.*—Tasmania: Ulverstone (A. M. Lea).

In general appearance rather close to *Nechyrus legitimus*, but mesosternal receptacle cavernous. In size, and to a certain extent in appearance, fairly close to the preceding species, but with head evenly convex throughout (although with punctures coarser in front than behind) and mesosternal receptacle less elevated in front, with its emargination deeper. The clothing also is more conspicuously variegated. On the prothorax the scales, for a rather wide space along the middle, are mostly sooty, on each side they are mostly fawn-coloured, but with a distinct paler spot close to the dark patch; on the basal half of the elytra they are mostly sooty, on the apical half mostly fawn-coloured, but largely mixed with whitish at summit of posterior declivity. On the abdomen and head they are entirely sooty. As the basal segment of its abdomen is flat in the middle the type is probably a male.

#### EXITHIUS TENEBROSUS, n. sp.

Black; antennæ and tarsi reddish. Densely clothed with muddy-brown and sooty scales. Prothorax with six very feeble fascicles, elytra with many.

*Head* rather strongly convex; with very dense punctures, concealed between eyes. Rostrum rather short, stout, and strongly curved, sides distinctly incurved to middle, distinctly notched on each side of base; with dense and coarse punctures, becoming more regular, but still dense, in front of antennæ. Scape stout, inserted in middle of rostrum, about half the length of funicle and club combined. *Prothorax* rather strongly transverse, sides strongly rounded; with dense partially-concealed punctures; second to seventh interstices with very feeble tubercular swellings, supporting feeble

fascicles. *Mesosternal receptacle* rather feebly elevated. Metasternal episterna distinct throughout. Basal segment of *abdomen* flat or feebly depressed in middle. *Femora* stout, strongly dentate. Length,  $5\frac{1}{2}$ -6 mm.

*Hab.*—New South Wales: Jindabyne (H. J. Carter).

In general appearance fairly close to *brevis*, but larger, rostrum shorter and stouter, and femoral dentition stronger. The teeth on the femora are acute and rather strong; on *brevis* they are all small, those on the front pair being traceable with difficulty; *fumatus* is a larger species, with paler clothing and distinct sutural granules. The clothing on the episterna is distinctly ochreous, and, to the naked eye, appears as a conspicuous short line on each, as it is also partly on the sides of the metasternum as well, it causes the episterna to appear wider than they really are. Of the two typical (and probably male) specimens, one has shades of colour of the scales scarcely contrasted, and on the other the shades are not conspicuous to the naked eye, so that the whole insect has a dingy appearance. The convexity of the head is partly due to a short and feeble median ridge.

#### EXITHIUS CONJUNCTUS, n. sp.

Black; antennæ and tarsi of a rather bright-red, rostrum and tibiæ somewhat darker. Densely clothed with large soft scales, mostly of a rather dingy-fawn colour, but in places sooty. Prothorax with six feeble fascicles, elytra with many.

*Head* depressed and somewhat sinuous in front; the depressed portion with coarse partially-concealed punctures, elsewhere with dense clearly-defined ones. Rostrum moderately wide, sides distinctly incurved to middle, lightly notched on each side of base; basal third with coarse partially-concealed punctures, elsewhere with rather small but clearly-defined ones. Scape inserted two-fifths from apex of rostrum, almost the length of funicle. *Prothorax* moderately transverse, sides strongly rounded, apex scarcely half the width of middle; punctures normally concealed. *Elytra* with sides rather strongly rounded, shoulders prominent, but not as wide as widest part of prothorax, base trisinate; with rows of large partially-concealed punctures; suture with conjoined tubercles at summit of posterior declivity, fourth tuberculate near apex; elsewhere with obsolete tubercles, supporting fascicles. *Under-surface* with punctures entirely concealed. Metasternal episterna not traceable throughout. *Femora* stout, strongly dentate. Length,  $3\frac{3}{4}$  mm.

*Hab.*—Tasmania: Nubeena (A. M. Lea).

A small unusually distinct species with very stout femora. The shoulders are distinctly projecting, although not to the

same extent as in *musculus*, from which species, and from all others of the genus, it may be distinguished by the conjoined fasciculated tubercles on the suture. On the prothorax the scales are sooty on the disc, but with two minute median spots, a small medio-basal spot, and the sides fawn-coloured. On the elytra the sooty scales are mostly confined to a subtriangular patch commencing on each shoulder and terminated beyond the middle. On the abdomen the scales are unusually dense and erect. As the two basal segments of its abdomen are rather strongly convex, the type is probably a female.

*EXITHIUS LOCULIFERUS*, n. sp.

♂. Black; antennæ and tarsi of a rather bright-red, rostrum and tibiæ darker. Densely clothed with large, soft, sooty scales, conspicuously variegated with more or less ochreous, sometimes whitish, ones. With numerous erect scales scattered about, and in places forming fascicles.

*Head* convex; with dense punctures, concealed in front. Rostrum moderately long, sides distinctly incurved to middle; base and sides near base with coarse partially-concealed punctures, elsewhere with dense and small clearly-defined ones. Scape inserted two-fifths from apex of rostrum, not much shorter than funicle. *Prothorax* twice as wide as long, sides strongly rounded; with dense partially-concealed punctures. *Elytra* scarcely once and one-half as long as wide, sides moderately rounded, base almost truncate; with rows of large almost-concealed punctures; suture usually with some small shining granules. *Mesosternal receptacle* strongly elevated. *Metasternal episterna* narrow and indistinct. *Femora* stout, strongly and acutely dentate; four front tibiæ subfalcate. Length,  $3\frac{3}{4}$ -5 mm.

♀. Differs in having the rostrum thinner and smoother, with sparser and smaller punctures, antennæ inserted not quite so close to apex, and basal segment of abdomen moderately convex, instead of flat in middle.

*Hab.*—Tasmania: Mount Wellington (H. H. D. Griffith); Hobart, Huon River, Launceston, Ulverstone (A. M. Lea).

An unusually short robust species, not very close to any previously described one. It has dense erect scales, set amongst the others, and in places compacted into feeble fascicles. On the prothorax there are usually two ochreous spots (each composed of from one to six scales) in middle, and one in middle of base. The ochreous scales may either almost entirely cover the sides, or but a small portion of same. On the elytra there is a conspicuous coffin-shaped patch of ochreous scales on the posterior declivity, its outlines always

distinct, but its inner parts usually more or less largely variegated with black; there are also a few ochreous spots about the base, and a small whitish one on the fifth interstice at the basal third. On the under-surface the scales are mostly ochreous, but often variegated with sooty. On the legs they are usually sooty and ochreous, but frequently variegated with white on the femora. The depressed scales on the elytra are comparatively small and closely compacted; on the abdomen and sides of prothorax they are considerably larger and each is distinct. On abrasion the elytral punctures are seen to be very large and wider than the interstices; before abrasion, however, the majority are quite concealed. The femoral dentition is unusually strong and acute.

EXITHIUS MEGAPHOLUS, n. sp.

Blackish; antennæ and tarsi of a rather bright-red, rostrum and rest of legs somewhat darker. Densely clothed with large soft scales, mostly fawn coloured, but with a few whitish and sooty ones; with numerous stiff erect scales scattered about.

*Head* with dense concealed punctures in front. Rostrum moderately wide, sides lightly incurved to middle; base and sides near base with coarse partially-concealed punctures, elsewhere with dense and small but clearly-defined ones; a feeble impunctate line along middle. Scape inserted one-third from apex of rostrum, almost the length of funicle. *Prothorax* strongly transverse, sides strongly rounded; punctures normally concealed. *Elytra* with sides rounded and widest at about basal third, base trisinate; with rows of large partially-concealed punctures; suture with a few granules near base. *Mesosternal receptacle* strongly elevated. *Metasternal episterna* indistinct. *Abdomen* with basal segment feebly depressed in middle, its suture with second almost straight. *Femora* stout, lightly but acutely dentate. Length, 4 mm.

*Hab.*—Tasmania: Frankford (A. M. Lea).

On the prothorax the scales are unusually large and soft, and its fascicles (six in number) are very feebly compacted and indistinct. On the elytra several feeble fascicles are present, but the erect scales are usually not compacted together, the sooty erect ones are usually placed in very feeble transverse series. The head is densely clothed in front, the clothing abruptly ceasing, with a somewhat sinuous outline, at the forehead; this is normally concealed with the head at rest, but on exposure is seen to be densely covered with small punctures and fine strigæ. The femoral teeth are almost concealed by the clothing.

## EXITHIUS STENOCERUS, n. sp.

Blackish; antennæ and tarsi reddish. Moderately densely clothed with dingy-brown scales, becoming sooty in places. Prothorax with six feeble fascicles, the elytra with more.

*Head* with punctures concealed in front. Eyes rather more prominent than usual. Rostrum rather wide, almost parallel-sided; with dense and coarse punctures, almost concealed except at tip, where they are smaller. Antennæ thin; scape inserted one-fourth from apex of rostrum, and the length of funicle; club elliptic-ovate. *Prothorax* moderately transverse, sides strongly rounded; with partially-concealed granules and coarse concealed punctures; with a short and feeble median carina. *Elytra* rather elongate, sides lightly rounded, base lightly trisinate; with rows of large, deep, suboblong, partially-concealed punctures; third to eighth interstices with small tubercles, supporting fascicles; suture with a few small granules. *Under-surface* with dense rough punctures. *Mesosternal receptacle* scarcely raised, rather widely U-shaped. Metasternal episterna very narrow, but traceable throughout. Basal segment of *abdomen* depressed in middle. *Femora* not very stout, rather lightly dentate. Length,  $4\frac{1}{2}$  mm.

*Hab.*—King Island (A. M. Lea).

At first sight apparently belonging to *Roptoperus*, but femora feebly dentate and third tarsal joint wider. The mesosternal receptacle has the base moderately wide and the emargination transverse, but is less conspicuously raised, and with a smaller base than is usual in the genus; the antennæ also are thinner, and are inserted nearer the apex of rostrum than is usual. The hind femora are partially ringed with white scales, but except for this the clothing is nowhere distinctly variegated. On the type (almost certainly a male) most of the head is concealed under the apex of the prothorax.

## Group 3.

## EXITHIUS OCCIDENTALIS, n. sp.

Blackish; antennæ and tarsi reddish, rostrum somewhat darker. Rather densely clothed with scales varying from almost white to sooty.

*Head* evenly convex; punctures normally concealed. Eyes larger than usual. Rostrum moderately long, sides lightly incurved to middle; with small and fairly dense punctures in front, becoming larger towards and concealed at base; with an impunctate median line. Scape inserted one-third from apex of rostrum, about as long as funicle. *Prothorax* moderately transverse, evenly convex, sides strongly rounded, apex more than half the width of middle; with dense partially-

concealed punctures. *Scutellum* small but distinct. *Elytra* elongate-cordate, sides rather strongly rounded, each separately rounded at base; with rows of rather large more or less concealed punctures. *Mesosternal receptacle* strongly elevated. *Metasternal episterna* narrow. Basal segment of *abdomen* moderately convex. *Femora* not very stout, edentate. Length,  $3\frac{1}{2}$  mm.

*Hab.*—Western Australia: Vasse River (A. M. Lea)

The edentate femora are as in *sculptilis*, *auchmeresthes*, and the following species, all of which, however, are without a distinct scutellum. It is the only species known to occur in Western Australia. The scales are mostly fawn-coloured, the sooty and whitish ones are usually in feeble irregular spots. On the prothorax the scales are larger than elsewhere. There are no distinct fascicles, but the elytra have some sooty scales compacted on a feeble tubercular swelling on the third interstice near base, and on the fourth about the middle

#### Group 4.

##### EXITHIUS TRICARINATUS, n. sp.

Black; antennæ and tarsi of a rather bright-red. Densely clothed with sooty scales, variegated in places with ochreous.

*Head* with coarse punctures, quite concealed in front. Eyes rather small. Rostrum rather stout, sides lightly incurved to middle; with dense and coarse punctures, concealed about base; base tricarinate, median carina stronger than the others and continued for a short distance in front of antennæ. Scape shorter than usual, inserted slightly nearer base than apex of rostrum, scarcely half the length of funicle and club combined. *Prothorax* rather feebly transverse, sides moderately rounded; with dense more or less concealed punctures; with a very feeble median carina. *Elytra* about once and one-third as wide as long, sides strongly rounded, base rather lightly trisinate; with rows of large partially-concealed punctures; alternate interstices feebly elevated, the second feebly elevated and shining at base. *Mesosternal receptacle* strongly elevated. *Metasternal episterna* not continuous throughout. Basal segment of *abdomen* flat across middle, its suture with second strongly curved in middle and deep at sides. *Femora* stout, edentate. Length,  $3\frac{1}{2}$  mm.

*Hab.*—Tasmania: Stanley, from summit of "Nut"; King Island (A. M. Lea).

In general appearance like small specimens of *brevis* or *inamabilis*, but femora edentate. On the types the ochreous scales are almost absent from the prothorax, on the elytra there are a few feeble spots scattered about, and a feeble transverse row of same at summit of posterior declivity; there is also a

feeble whitish spot on the third interstice at the basal third. On the under-surface the ochreous scales are almost confined to the three apical segments.

EXITHIUS BREVIS, Lea.

The type of this species was somewhat abraded. Specimens in perfect condition have the scales mostly deep-black, more especially those forming the rather numerous fascicles. The species appears to be fairly common on the Blue Mountains; and two specimens from that locality have two small white spots on the elytra at the summit of the posterior declivity, one of these having in addition two small median spots. The rostrum is conspicuously notched on each side of the base.

Following is a table of the species:—

A. Prothorax conspicuously dilated in front ...	<i>cariosus</i>
AA. Prothorax not so dilated.	
B. Femora edentate.	
a. Scutellum distinct ... ..	<i>occidentalis</i>
aa. Scutellum indistinct or absent.	
b. Prothorax with large punctures, usually sharply defined ... ..	<i>sculptilis</i>
bb. Prothorax with smaller punctures, more or less concealed.	
c. Each elytron with three conspicuous fascicles, almost in line with suture ... ..	<i>auchmeresthes</i>
cc. Elytra without such fascicles ...	<i>tricarinatus</i>
BB. Femora dentate.	
C. Scutellum very distinct.	
d. Shoulders conspicuously projecting.	
e. Elytra less than twice the length of prothorax ... ..	<i>ferrugineus</i>
ee. Elytra more than twice the length of prothorax ... ..	<i>musculus</i>
dd. Shoulders not conspicuously projecting.	
f. Each elytron with a conspicuous lateral patch of whitish scales ...	<i>ephippiatus</i>
ff. Elytra not so clothed.	
g. Suture without granules near base	<i>cyclothyreus</i>
gg. Suture with a few granules near base.	
h. Posterior declivity rather elongate ... ..	<i>basipennis</i>
hh. Posterior declivity rather abrupt.	
i. Prothoracic scales variegated along middle ... ..	<i>conspiciendus</i>
ii. Prothoracic scales not so variegated ... ..	<i>trisinuatus</i>
CC. Scutellum indistinct or absent.	
D. Each elytron with a conspicuous curved ridge at summit of posterior declivity ... ..	<i>tropidopterus</i>

- DD. Elytra without such ridges.
- E. Suture with conspicuous conjoined tubercles near summit of posterior declivity ... *conjunctus*
- EE. Suture without such tubercles.
- F. Head with forehead more or less sinuous.
- j. Suture between two basal abdominal segments almost straight ... *megapholus*
- jj. This suture distinctly curved in middle ... *athyreus*
- FF. Head evenly convex.
- G. Mesosternal receptacle suddenly elevated.
- k. Femoral teeth large ... *loculiferus*
- kk. Femoral teeth small.
- l. Largest elytral fascicles subapical ... *loculosus*
- ll. Largest subbasal.
- m. Suture between two basal abdominal segments almost straight ... *obliquus*
- mm. This suture curved in middle.
- n. Prothorax with pale scales along middle ... *simulator*
- nn. Prothorax without such scales ... *fumatus*
- GG. Mesosternal receptacle not suddenly elevated.
- H. Antennæ inserted much nearer apex than base ... *stenocerus*
- HH. Antennæ inserted, at most, slightly in front of middle.
- I. Prothoracic clothing conspicuously variegated ... *intermixtus*
- II. Prothoracic clothing, at most, feebly variegated.
- J. Femoral teeth moderately large and distinct.
- o. Sides of rostrum distinctly incurved to middle ... *tenebrosus*
- oo. Sides of rostrum almost parallel ... *obscurus*
- JJ. Femoral teeth small and indistinct.
- K. Punctures of head clearly defined ... *inamabilis*
- KK. Punctures of head confused ... *brevis*

## TAPINOCIS, n. g.

Head rather small, regularly convex, partially concealed from above. Eyes coarsely faceted. Rostrum rather



long and somewhat thin, lightly curved. Antennæ rather thin, inserted nearer apex than base of rostrum; two basal joints of funicle elongate; club ovate. *Prothorax* transverse, sides rounded, apex produced. *Scutellum* small or absent. *Elytra* subovate, base trisinate. *Pectoral canal* deep and moderately wide, terminated between middle coxæ. Mesosternal receptacle with narrow U-shaped walls; slightly cavernous. Metasternum very short, but episterna traceable throughout. *Abdomen* large, intercoxal process wide, two basal segments large, the suture between them incurved to middle. *Legs* rather thin but not very long; femora neither grooved nor dentate, hind pair not extending to apical segment; tibiæ straight, except at extreme base. Densely squamose, fasciculate, apterous.

The genus is rather close to *Exithius*, but distinguished therefrom by the thin and U-shaped mesosternal receptacle, metasternal episterna traceable throughout, convex forehead and femora neither grooved nor dentate. The mesosternal receptacle is almost open, but as the wall at its extreme base slightly overlaps the canal it must be regarded as cavernous. The three known species are all Tasmanian.

Scutellum present ... .. *scutellaris*

Scutellum absent, or very indistinct.

Largest fascicles near base of elytra ... .. *corticalis*

Largest fascicles near summit of posterior declivity ... .. *subapicalis*

#### TAPINOCIS CORTICALIS, n. sp.

♂. Black; antennæ and tarsi reddish. Densely clothed with muddy-grey scales; with some darker, stout, erect ones scattered about, and in places condensed into fascicles. Under-surface setose.

*Head* with very dense concealed punctures. Rostrum fully the length of prothorax, sides lightly incurved to middle, base wider than apex; basal two-thirds with coarse concealed punctures, apical third with smaller and mostly-exposed ones. *Prothorax* moderately transverse, sides strongly rounded, apex more than half the width of base; with dense, round, concealed punctures. *Scutellum* not traceable. *Elytra* ovate-cordate, sides gently rounded; with rows of large and usually somewhat angular, but normally almost concealed, punctures; with a few small granules (sometimes concealed) on suture near base. Under-surface with dense setiferous punctures, larger on metasternum than elsewhere, and forming a single row across each of the third and fourth abdominal segments. Length, 4-5½ mm.

♀. Differs in having the rostrum distinctly longer and thinner, basal fifth only with concealed punctures, the surface

elsewhere shining and with small clearly-defined ones; antennæ inserted just in advance of middle, instead of at apical two-fifths; abdomen more convex, and legs somewhat shorter.

*Hab.*—Tasmania: Mount Wellington (H. H. D. Griffith and A. M. Lea); Hobart (L. Rodway).

The fascicles on some specimens are but little darker than the surrounding scales, but on others are almost sooty. There are six on the prothorax: four across middle and two at apex, but some of these occasionally disappear. On the elytra they are confined to the odd interstices, and are usually very feeble, except for four fairly distinct ones near the base. Several specimens have the clothing mostly of a muddy-brown, instead of a muddy-grey, and some others have the scales on the posterior declivity (except at the sides) distinctly paler (almost white) than the others. Numerous specimens were taken under bark of living trees and in crevices of dead ones

#### TAPINOCIS SCUTELLARIS, n. sp.

♂. Black or blackish; antennæ and tarsi reddish. Densely clothed with muddy-grey scales, sometimes obscurely variegated with muddy-brown; with some stout scales scattered about, and in places condensed into fascicles. Under-surface with rather stout setæ. Legs densely clothed, and sometimes obscurely ringed.

*Head* with very dense and usually concealed punctures. Rostrum about the length of prothorax, sides distinctly incurved to middle; with coarse crowded punctures, except on a short, shining, median line, but partially concealed on basal half. *Prothorax* moderately transverse, sides on basal half feebly rounded, apex more than half the width of middle; with dense concealed punctures and with a short and feeble median carina. *Scutellum* small, but elevated and distinct. *Elytra* slightly dilated from base to beyond the middle, thence coarctate to apex; with rows of large partially-concealed punctures, becoming smaller posteriorly; interstices with tubercular swellings, supporting fascicles, a granule on each side of base close to scutellum. *Under-surface* with rather dense setiferous punctures. Metasternum somewhat shorter than in the preceding species, and with smaller punctures. Length,  $4\frac{1}{2}$ –5 mm.

♀. Differs in having the rostrum somewhat longer and thinner, shining, with smaller and sparser punctures, concealed only at basal fourth; antennæ inserted slightly nearer the middle of rostrum, and abdomen more convex.

*Hab.* — Tasmania: Mount Wellington (H. H. D. Griffith); Launceston (Aug. Simson, his 3208).

The prothorax has larger and more rounded scales than elsewhere, its fascicles are rather loosely compacted and six in

number. On the elytra there are fairly numerous fascicles, mostly on the odd interstices, the most distinct of all is on the third, crowning the posterior declivity.

*TAPINOCIS SUBAPICALIS*, n. sp.

Blackish; antennæ and tarsi reddish. Rather densely clothed with somewhat variegated scales, and with numerous fascicles. Under-surface moderately clothed.

*Head* with dense concealed punctures. Rostrum slightly longer than prothorax, sides moderately incurved to middle; basal fourth with concealed punctures, elsewhere shining and with small but clearly-defined ones, larger on sides than along middle. *Prothorax* rather lightly transverse, sides strongly rounded, apex more than half the greatest width; with dense more or less concealed punctures; with a short and feeble median line. *Scutellum* not traceable. *Elytra* moderately dilated to beyond the middle; with rows of large partially-concealed punctures; with tubercles supporting fascicles. Under-surface much as in preceding species. Length, 5 mm.

*Hab.*—Tasmania (J. E. Philp).

In build somewhat resembling the preceding species, but the scutellum not traceable, and without the two small tubercles or granules near the same. The type is evidently in perfect condition, and is probably a female. Its clothing is mostly of a chocolate-brown, varied in places with muddy-brown or muddy-grey, and with a distinct curved line of pale scales on each side of the posterior declivity near apex. It is probable, however, that, as with the two preceding species, the clothing is subject to considerable variation. On the prothorax there are six fascicles in the usual positions. On each elytron there is a large fascicle crowning the posterior declivity, and rather numerous ones elsewhere, but mostly on the third (on which the large one is placed), fifth, and seventh interstices.

*TENTEGIA CYCLOPTERA*, n. sp.

Black; antennæ and tarsi of a dingy-red. Sparsely clothed with brownish scales, but becoming dense on legs. Each granule with a stout and usually curved seta.

*Head* with large coarse punctures in front, elsewhere with dense small ones. Rostrum stout, lightly curved, sides gently incurved to middle; punctures as on front of head, but at apex crowded and smaller. Scape inserted in middle of rostrum, about half the length of funicle and club combined. *Prothorax* strongly convex, moderately transverse, sides strongly rounded; with numerous large granules or small tubercles, regularly disposed, but smaller at apex than elsewhere. *Elytra* not much longer than wide, sides strongly

rounded, base truncate, apex rather narrow, with rows of large punctures, alternating with rows of large granules. *Under-surface* with coarse punctures, except on third and fourth segments of abdomen. *Legs* long; femora edentate, the hind ones passing apex of elytra: tibiae ridged on each side. Length,  $5\frac{1}{2}$  mm.

*Hab* —Torres Straits: Banks Island (H. Elgner).

In general appearance close to *anopla*, but sides of elytra not clasping prothorax at base, and punctures of under-surface, although large, less sharply defined, rostrum stouter and with punctures not in regular series. From *quadriseriata*, which has the base of elytra very similar, it is distinguished by its rostral punctures and edentate femora. Although the punctures on the rostrum are not in four distinct rows, they have, nevertheless, a tendency to a linear arrangement. The elytral punctures are so placed that each is bounded by four granules, and the granules so that each is bounded by four punctures.

IMALIODES OOPTERUS, n. sp

♂ Black; antennae and tarsi reddish, with rusty-brown scales, rather dense on under-surface and legs, sparser on upper-surface.

*Head* with dense partially-concealed punctures. Eyes rather small and prominent, facets rather coarse. Rostrum moderately long, not very thin, sides distinctly incurved to middle; punctures dense on apical fourth, but elsewhere concealed. Scape inserted almost in exact middle of rostrum, the length of three following joints combined; second joint of funicle about twice the length of first. *Prothorax* about as long as wide, sides strongly rounded, apex almost as wide as base; with large and usually clearly-defined punctures. *Scutellum* absent. *Elytra* elliptic-ovate, strongly convex, each separately feebly rounded at base, shoulders not produced, sides rather strongly and evenly rounded; with rows of large punctures, becoming smaller posteriorly; third interstice with a distinct tubercle near base, the second with several feeble swellings. Third and fourth segments of *abdomen* slightly depressed below level of fifth and distinctly below level of second. *Legs* rather long and thin: femora feebly grooved, edentate, hind pair passing apex of elytra. Length, 7 mm.

*Hab.*—Queensland: Mulgrave River (H. Hacker, his Nos. 1148 and 1155).

The edentate femora and long second joint of funicle associate this species with *edentatus*, from which it differs in

being larger, with longer legs, less densely clothed, punctures more clearly defined, and by the base of elytra. At a glance it looks very close to *Anchithyrus caliginosus*, but (apart from several generic distinctions) that species has the two basal joints of funicle subequal in length. On the prothorax there are three feeble median swellings moderately densely clothed, but they are not very distinct. The tubercle on the third interstice of each elytron of the type is connected by a slight ridge with its fellow across the suture, and with the base by a still more feeble ridge; between the ridges the punctures are much smaller than the adjoining ones. This peculiar structure is evidently not an accidental variation, as it is the same on some specimens that were in Mr. Hacker's private collection, now in the Berlin Museum.

*IMALIODES VENTRALIS*, n. sp.

♂. Black; antennæ and tarsi obscurely diluted with red. Densely clothed with ashen-grey scales, denser on legs and paler on shoulders than elsewhere.

*Head* rather convex; punctures concealed. Eyes rather small and with rather fine facets. Rostrum moderately long, not very thin, sides lightly incurved to middle, punctures concealed, except at tip, where they are dense. Scape inserted slightly nearer apex than base of rostrum, about half the length of funicle and club combined; two basal joints of funicle rather long and thin, subequal in length. *Prothorax* rather convex, moderately transverse, sides strongly rounded. *Scutellum* absent. *Elytra* elliptic-ovate, strongly convex, base almost truncate, but shoulders feebly and obtusely produced, sides strongly rounded; with rows of large punctures, becoming smaller posteriorly; with numerous small tubercular swellings. *Mesosternal receptacle* strongly elevated. *Abdomen* with third and fourth segments narrow across middle but wider at sides. *Femora* stout, widely grooved, rather lightly dentate, hind pair not extending to tip of abdomen. Length, 7½-8 mm.

♀. Differs in having the rostrum somewhat longer, punctures concealed only at base, elsewhere fairly large and dense, except along middle; scape inserted in middle of rostrum, and abdomen slightly more convex.

*Hab.*—New South Wales: Dorrigo (H. J. Carter).

Allied to *scitulus* and *nodulosus*, from the former distinguished by the distinctly shorter rostrum, and from the latter by the elytra not trisinate at base. The abdomen also is different. The prothorax has four feeble fascicles across

the middle, supported by feeble swellings; before abrasion no punctures are visible on it, but after same a few shallow and rather small ones are exposed. The tubercular swellings on the elytra are not by themselves very conspicuous, but as the scales clothing them are rather dense, they have the appearance of small fascicles; there are from two to four on each interstice, except on the suture and on the outer interstices. The hind part of each of the third and fourth segments of abdomen, except at the sides, appears to be transversely scooped out, leaving only a thin median ridge, which supports a row of erect scales; if these are abraded a row of punctures becomes evident. The tip of the second segment is similarly scooped out, but the segment itself being considerably longer than the two following ones, this appearance is not so noticeable.

IMALIODES SQUAMIROSTRIS, n. sp.

♂. Black; antennæ and tarsi obscurely diluted with red. Densely clothed with muddy-grey scales.

*Head* with shallow concealed punctures. Eyes rather small, with rather fine facets. Rostrum rather long and not very stout, sides lightly incurved to middle; punctures concealed. Scape inserted slightly nearer apex than base of rostrum, the length of three following joints combined; two basal joints of funicle elongate, second somewhat longer than first. *Prothorax* moderately transverse, sides strongly rounded, apex about half the width of base; with four obtuse swellings, supporting small fascicles, across middle; punctures small, sparse, and concealed. *Scutellum* absent. *Elytra* elliptic-ovate, strongly convex, base lightly bisinuate, shoulders obtuse and scarcely produced; with irregular rows of large punctures; with numerous small tubercular swellings. Third and fourth segments of *abdomen* level with second and fifth. *Femora* stout, widely grooved, feebly dentate, hind pair extending to middle of apical segment. Length,  $8\frac{1}{2}$ - $9\frac{1}{2}$  mm.

*Hab.*—Queensland: Gayndah (Pascoe's collection); Moreton Bay (Bowring's collection). Type in British Museum.

Close to the preceding species, but larger, and abdominal segments different. Also allied to *scitulus* and *nodulosus*, but much larger (it is the largest of the genus) and base of elytra different. The typical specimens (two) are evidently males, and have the rostrum densely squamose to the tip, on abrasion dense punctures are exposed, and towards the tip a median carina. The suture and lateral interstices are without tubercles, but there are from one to three on each of the

others; the suture is distinctly thickened on each side of the base.

ANILAUS COSTIROSTRIS, Lea.

Var. A. Two specimens from the Endeavour River (Macleay Museum) differ from the types in having the derm of the upper-surface almost entirely black, and its clothing quite uniform in colour.

Var. B. A female from Kuranda (Solari Bros.) also has the derm almost black, but with the clothing of the upper-surface denser and varying from white to black.

Var. C. Three specimens from Queensland (H. Hacker) are of a bright pale-castaneous, their clothing is sparser than on the types, but is conspicuously variegated. On the prothorax the scales are whitish, brick-red, and black, the black ones being mostly about the middle and apex; on the elytra there are some black scales about the scutellum, the apical third and sides, almost to shoulders, have black scales rather thickly scattered on a space whose inner outline is semicircular, there are also some snowy scales about and amongst the black ones. On the under-surface the scales are mostly brick-red and ashen.

ODOSYLLIS LAMINATA, n. sp

♂. Black; antennæ and tarsi more or less reddish. Very densely clothed with somewhat slaty-brown scales, variegated with paler and darker ones. Front tibiæ with a conspicuous fringe of golden hairs on apical three-fifths and continued on to tarsi.

*Head* with dense concealed punctures. Rostrum rather long, sides dilated towards and notched at base; behind antennæ with rather coarse punctures partially-concealed on basal third, elsewhere shining and with much smaller and sparser ones. Antennæ rather stout, inserted slightly nearer apex than base of rostrum; two basal joints of funicle rather long and subequal. *Prothorax* rather strongly transverse, sides rather strongly rounded, apex about one-third the width of base; punctures concealed; with numerous shining granules, each with a setiferous puncture in front. *Scutellum* distinct but not conspicuously elevated. *Elytra* but little wider than prothorax, sides feebly rounded to beyond the middle, and then strongly narrowed to apex; with rows of almost-concealed punctures, in distinct striæ; interstices with rather numerous granules on basal half, but sparse elsewhere, third somewhat elevated near base. *Under-surface* with dense punctures, each with a large covering scale. *Legs* moderately long; front femora rather strongly, the others lightly dentate. Length,  $8\frac{1}{2}$ -10 mm.

*Hab.*—Queensland: Endeavour River (C. French and H. W. Brown).

A comparatively small species, at a glance somewhat resembling *Cryptorhynchus stigmaticus* and *C. verus*. In *O. scutellaris* the elytral scales are rounded, and but few overlap; in the present species they are somewhat larger and all are more or less overlapping, so that the surface has a curiously laminated appearance. On the abdomen and sides of sterna the scales are larger than elsewhere. The elytra are without a conjoint apical mucro, although the apex itself is somewhat acute. On the prothorax of the type there are no distinct pale spots, but on three obscure lines they are somewhat paler than elsewhere. On each elytron there is a distinct pale spot on the fourth interstice, slightly beyond the basal third, and a transverse cluster of pale spots across summit of posterior declivity. On the second specimen the spot on the fourth interstice is still more distinct, but there are no pale spots beyond the middle; about the middle itself there are numerous small sooty spots. On the prothorax of this specimen also four vague spots can be traced across the middle.

#### CYPHODEROCIS, n. g.

*Head* rather small, partially concealed from above. Eyes large, widely separated, facets of moderate size or rather large. Rostrum moderately long and rather thin, distinctly curved. Antennæ thin, inserted nearer apex than base of rostrum; two basal joints of funicle elongate; club elliptic-ovate. *Prothorax* transverse, sides rounded, base bisinuate, apex produced. *Scutellum* distinct. *Elytra* parallel-sided to beyond the middle, base trisinuate. *Pectoral canal* deep and rather narrow, terminated between middle coxæ. Mesosternal receptacle with thin U-shaped walls; slightly cavernous. Metasternum slightly shorter than the following segment; episterna rather large. *Abdomen* rather large, first segment longer than second, its apex lightly incurved to middle; third and fourth combined the length of second, and longer than fifth. *Legs* moderately long, femora stout, strongly dentate, not grooved; tibiæ thin, compressed, lightly curved, with distinct ridges; tarsi with first and fourth joints elongate, third wide and deeply bilobed.

The position of this genus is somewhat doubtful, but provisionally it may be placed with the allies of *Chaetectorus*. The facets of the eyes are of moderate size or rather coarse. Regarding them as coarse it would be associated <sup>(40)</sup> with

(40) In the table given in Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.



*Acrotychreus*, which has falcate tibiae, much more prominent eyes, and much shorter body, but its only known species has also an elongated fascicle on each elytron.

CYPHODEROCIS DORSALIS, n. sp.

Black: antennae and tarsi of a dingy-red. Densely clothed with dingy-brown scales, feebly variegated in places. Prothorax with a conspicuous median fascicle and some smaller ones; elytra with two conspicuous, elongated, median fascicles and some smaller ones

*Head* with rather coarse partially-concealed punctures; a fairly large depression (filled with scales) behind each eye. Rostrum parallel-sided, except at extreme base; with dense and rather coarse punctures, but concealed on basal third. Scape inserted about two-fifths from apex of rostrum, almost the length of funicle. *Prothorax* rather strongly transverse, sides strongly rounded, apex less than half the width of base; with dense more or less concealed punctures; with feeble swellings supporting fascicles, but the median one large; with a short medio-basal carina. *Elytra* about one-fourth wider than prothorax and more than four times as long; with rows of large partially-concealed punctures, becoming small posteriorly; with feeble swellings supporting fascicles: with a few small sutural granules. Length,  $10\frac{1}{2}$  mm.

*Hab.*—Queensland: Mount Tambourine (R. Illidge).

The majority of the elytral scales are of a rusty-brown, but on the sides they are more or less of a chocolate-brown; the two shades of colour on the type being limited on each elytron by a line running from the shoulder to the elongated fascicle on the third interstice, continued along same, then directed slightly outwards to the preapical callus, and then slightly narrowed to the apex. On the prothorax the median fascicle is very conspicuous, and is evidently supported by a fairly large tubercle: there are also four feeble fascicles: one on each side near middle of base, and one on each outer side of middle; and there are two very feeble apical ones. On the elytra the very conspicuous ones are about one-fifth the length of elytra, and the scales composing them are so long that if flattened inwards they would touch the suture: there are also fairly distinct fascicles supported by feeble tubercles, on the third interstice near base, and the preapical callus half-way down the posterior declivity, and two feeble ones on the fifth near base. The femoral teeth are all strong and acute. There are four or five narrow sharply-defined ridges on each side of each tibia.

ISAX.

CHIMADES.

PHLÆOGLYMMA.

EPHYCUS

ACHOPERA.

ACHOPERINUS.

BEPHARUS

In the table of genera allied to *Chaetectetorus* <sup>(41)</sup> the above ones were noted as having tibiae with terminal hook only. As a matter of fact, the species of all these genera have (or, at any rate, their front tibiae have) a small subapical tooth to each tibia; but the tooth is usually very feeble, and appears as if due to the sudden termination of the lower ridge.

PHLÆOGLYMMA LONGIROSTRIS, n. sp.

Black: antennae and tarsi red. Densely clothed with dingy-grey scales, variegated with sooty and brick-red ones; on the under-surface and legs mostly brick-red and whitish

*Head* with dense partially-concealed punctures. Rostrum long and rather thin, sides lightly incurved to middle; shining and with rather sparse and small punctures in front, becoming coarse towards and partially concealed about base. Antennae thin, inserted in middle of rostrum; scape the length of funicle; second joint of funicle slightly longer than first. *Prothorax* strongly transverse, sides strongly rounded; with dense, round, concealed punctures; apparently with a feeble median carina. *Elytra* closely applied to and shoulders slightly clasping sides of prothorax, parallel-sided to beyond the middle, scarcely twice as long as wide; with rows of large punctures, becoming smaller posteriorly; interstices much wider than seriate punctures, second with an obtuse elongated tubercle, with small granules about middle, third with a more distinct but shorter one near base, and an indistinct one near middle, fourth with a small one near middle; a few small granules elsewhere. *Femora* stout, rather strongly dentate; middle tibiae angular or subdentate near outer base, the others less noticeably so. Length,  $6\frac{1}{2}$  mm.

*Hab.*—New South Wales: Gosford (H. J. Carter).

The rostrum is rather long for the genus, but the large finely-faceted eyes, strong femoral teeth, and open receptacle are as in other species. Its outlines are much like those of *dorsalis*, but that species has very different clothing and middle tibiae unarmed at the base; the other species are narrower and

(41) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.

differently clothed. At first sight it appears to belong to *Episodiocis*, but differs in having the femora grooved as well as dentate, shoulders clasping prothorax, and receptacle with hind margin not elevated, but widely and conspicuously open. To the naked eye the upper-surface appears of a muddy-brown: on the elytra the brick-red scales are scattered singly or in small spots. The sooty scales are more closely compacted together than the others, and are more numerous about the shoulders and on a postmedian zone than elsewhere; when the elytra are viewed from behind they are very conspicuous. There are a few white scales, but they are mostly confined to the seriate punctures. On the prothorax the scales are larger than elsewhere, and sooty ones are absent; the brick-red ones are more numerous along the middle, sides, and apex than elsewhere. There are five very feeble fascicles across the middle and two at apex.

*EPHRYCUS VARIABILIS*, n. sp.

Reddish-castaneous; antennæ paler but club darker. Densely clothed with light-brown or fawn-coloured scales, more or less variegated with sooty, and sometimes with whitish ones; with stout scales scattered about and in places condensed into fascicles. Under-surface with white or whitish scales.

*Head* with dense concealed punctures. Rostrum not very long, rather wide: more than half shining, and with small punctures. Scape stout, inserted fairly close to base of rostrum, about half the length of funicle and club combined; club rather large. *Prothorax* moderately transverse, base truncate, and almost twice the width of apex: with four feeble fascicles across middle and two at apex; with dense concealed punctures. *Elytra* not much but distinctly wider than prothorax, base truncate, basal half parallel-sided; with rows of large partially-concealed punctures, in distinct striæ; second interstice with a tubercular swelling supporting a distinct fascicle near middle, third with a somewhat smaller one near base; very feeble ones elsewhere. *Under-surface* with dense normally-concealed punctures. Length, 2.2½ mm.

*Hab.*—Tasmania: Sheffield and Mount Wellington, in moss; Hobart (A. M. Lea).

More compact than *parvus* and *brachystylus*, and with the elytral fascicles differently arranged. At first it appears like a very small *Tychreus*, but the mesosternal receptacle is open. The facets of the eyes are rather larger than usual. Of the four specimens before me no two are exactly alike, but all the known species of the genus are more or less variable. On the type there are no white scales on the upper-surface, but the black ones form two oblique parallel stripes on each elytron: one

commencing at the median fascicle and terminating on the seventh interstice, the other commencing on the fifth near base and terminating just below the level of the large fascicle; there are a few spots about the apex, and on the prothorax there are a few. On a second specimen most of the scales on the elytra are more or less sooty, but there are some snowy ones at the base and about the summit of the posterior declivity: the oblique sooty stripes are distinct. The scutellum is conspicuously white. On the prothorax there is a large irregular sooty patch, but most of the scales are white or whitish. On a third specimen there are some conspicuously white scales and a few whitish spots on the elytra, but the sooty oblique stripes are broken up into spots. On the prothorax the two median and two apical fascicles are blackish, and the hind angles are snowy. It is probably a male, as the rostrum is slightly shorter than that of the others, and the punctures on it are rather more distinct. On the fourth specimen there are a few brownish spots on the elytra, but most of the scales are pale, the majority on the apical half being conspicuously white. On the prothorax there is a brownish, subtriangular, medio-basal spot, and the fascicles are brownish.

#### EPHRYCUS BRACHYSTYLUS, Lea.

Four specimens from Tasmania (Swansea) probably belong to this species, but differ from the types in having no trace of the subtriangular patch of pale scales on the elytra; but the "ill-defined patches of darker scales bordering its sides" are more conspicuous on the Tasmanian specimens, and are at the basal third and just beyond the middle; the submedian ones look like elongated fascicles, just beyond them and crowning the posterior declivity: on one specimen is a distinct whitish fascia not extending to the sides: on another specimen the fascia is fairly distinct; but on the others it is represented by a few whitish scales only. On the prothorax there are four distinct black fascicles across the middle, these on the types being represented by a few blackish erect scales. The scutellum is clothed with ochreous scales.

#### CHÆTECTETORUS CINERASCENS, n. sp.

Dark reddish-brown, in places almost black. Densely clothed with ashen-grey scales, variegated with muddy-brown. With stout erect scales scattered about, and condensed into numerous fascicles.

*Head* with dense concealed punctures. Rostrum rather short and wide, sides very feebly incurved to middle; punctures dense and rather coarse at tip, elsewhere concealed. Scape inserted about two-fifths from apex of rostrum, about

half the length of funicle and club combined. *Prothorax* about one-third wider than long, basal two-thirds almost parallel-sided; surface uneven, and with dense concealed punctures. *Elytra* distinctly wider than prothorax, parallel-sided to near apex; with rows of large punctures, in places partly concealed; alternate interstices conspicuously fasciculated. *Under-surface* with dense concealed punctures. Length, 4-4½ mm.

Hab.—Queensland: Cairns (H. W. Brown).

Differs from *egenus* (also from North Queensland) in being wider and less convex, clothing more variegated and the fascicles on the prothorax larger, and on the elytra more elongated. In many respects it is close to *clitellæ*, but there are no fascicles on the posterior declivity, and some of the others, notably on prothorax, are different; *latus* and *bifasciatus* are larger species, with longer and otherwise different fascicles. There are three specimens before me, probably all males. On one of them most of the scales on the upper-surface are of a greyish-white, and on each elytron conspicuously clothe the shoulder, and a curved line behind same, not quite extending to the suture at the basal third; and form a fascia at the apical third, narrow at the suture, and dilated to the side. Parts of its legs and of the under-surface are mottled with sooty scales. On the other specimens the clothing is less distinctly variegated. On the prothorax there are four fascicles across apex and four across middle, the middle ones of the latter are feebly continued to the base. The third, fifth, and seventh interstices each appear to have an elongated fascicle from near the base to summit of posterior declivity, but interrupted three times, so that they appear like four fascicles, of which the basal one is longer and the apical one shorter than any of the others.

PSEUDAPRIES SQUAMISERIATUS, n. sp.

♂. Pale-castaneous, almost flavous. Densely clothed with stramineous scales; with numerous short, stout, more or less erect ones scattered about, but on the elytra forming a regular row on each odd interstice, and a less distinct row on each of the even ones.

*Head* with dense concealed punctures. Rostrum not very long, sides notched at insertion of antennæ (almost in middle) with tips of scrobes visible from above; punctures very dense but concealed, except at tip. Scape stout, about as long as five following joints combined. *Prothorax* about as long as wide, with five longitudinal impressions; punctures concealed. *Elytra* not much wider than prothorax, base trisinate, sides gently rounded on basal half, but then rather rapidly

decreasing in width to apex: with rows of large punctures: interstices narrow, the alternate ones slightly elevated. *Meta-sternum* distinctly longer than the following segment; with large punctures. Basal segment of *abdomen* flat in middle, not as long as second and third combined, with a row of large punctures at base, and another of fairly large ones at apex; second with a row of rather large ones at base. Length,  $3\frac{1}{2}$ -4 mm.

♀. Differs in having the rostrum somewhat thinner, with the apical two-fifths shining, and the basal segment of abdomen gently convex.

*Hab* —New South Wales: Tweed River (H. W. Brown); Dorrigo (H. J. Carter).

The numerous rows of short upright scales give this species a very different appearance to that of any previously described one. On the prothorax the median impression is narrowed towards and closed at apex, but dilated and open posteriorly; near each margin is an impression shallow in the middle and subfoveate at the ends; and there is an elongate fovea on each side of the middle. Although the impressions are therefore five in number, on some specimens, owing to the clothing, there appear to be eight rather large foveæ. On the under-surface in addition to the large punctures there are numerous smaller and usually concealed ones. The hind femora each have a large median swelling, but it is too obtuse to be considered a tooth.

#### PSEUDAPRIES HUMERALIS, n. sp.

♂. Reddish-castaneous, in parts darker; antennæ and tarsi paler than other parts. Densely clothed with more or less rusty-brown scales, more or less strongly variegated with paler and darker ones; with numerous long and slightly curved scales scattered about.

*Head* with very dense concealed punctures. Rostrum rather wide, slightly dilated from near base to apex; shining, and with rather numerous punctures at apical third, elsewhere concealed. Scape stout, inserted nearer base than apex of rostrum, scarcely half the length of funicle and club combined. *Prothorax* slightly longer than wide; disc uneven and with concealed punctures. *Elytra* distinctly wider than prothorax, parallel-sided to about the middle; with rows of large, suboblong, more or less concealed punctures: interstices about the width of punctures, but apparently much wider. *Under-surface* with more or less concealed punctures, but many of fairly large size. Basal segment of abdomen about as long as second and third combined, gently depressed in middle. Length,  $2\frac{3}{4}$ -3 mm.

♀ Differs in having the rostrum somewhat longer, punctures smaller and concealed only on basal third; scape inserted somewhat closer to base of rostrum, and basal segment of abdomen gently convex in middle.

*Hab.*—New South Wales: Dorrigo (H. J. Carter); Gosford (H. W. Cox); Sydney (A. M. Lea).

At a glance resembles *Ephrycus obliquus*, but the mesosternal receptacle is cavernous. It is decidedly smaller than all previously described species, and the prothoracic impressions are less distinct than usual; they are of such a nature that they cause a series of four feeble tubercles across the middle, and four across the base. On each elytron there is a distinct, pale, oblique stripe, extending from the shoulder towards the suture, but not reaching same; and there is a less distinct one (sometimes almost absent) across summit of posterior declivity. On the scutellum and under-surface the clothing is pale. On the legs it is pale, variegated with sooty-brown patches. There are three small sooty fascicles on the third interstice, and two on the fifth. The long semi-upright scales, if flattened down, would extend across at least two interstices, but they appear to be very easily abraded. The metasternum and basal segment of abdomen are almost of exactly the same length along middle.

An apparently immature specimen (probably from Illawarra) differs in having the derm almost flavous, with most of the depressed scales on the upper-surface stramineous, or at least of a pale-brown, the oblique humeral stripe on each elytron is distinct, but the postmedian one is scarcely traceable. The small sooty fascicles, however, are more conspicuous than on the types.

#### EUCALYPTOCIS, n. g.

*Head* rather wide, concealed from above. Eyes small, widely separated, coarsely faceted. Rostrum rather short and wide, feebly curved. Antennæ inserted about middle of rostrum; scape shorter than funicle; funicle with two basal joints rather long, club ovate. *Prothorax* flat, triangular. *Scutellum* small. *Elytra* closely applied to prothorax, but somewhat wider, base trisinate, shoulders produced, sides narrowed from base to apex. *Pectoral canal* deep and wide. Mesosternal receptacle feebly raised, widely U-shaped, emargination strongly transverse; cavernous. Metasternum slightly longer than the following segment. *Abdomen* rather large, two basal segments large, first larger than second, intercoxal process wide. *Femora* moderately large, grooved, edentate; *tibiæ* compressed.

A curious genus of doubtful position but provisionally regarded as of the *Chatectetorus* group; in the table of

genera allied to that genus <sup>(42)</sup> it would be associated with *Achoperinus*, which has dentate femora and is otherwise very different. The species is a beautiful and very distinct one, and of it Mr. Griffith took five specimens that were hibernating under the bark of a eucalyptus tree. Their clothing is so dense as to quite conceal the side pieces of the meso- and metasternum, and all the punctures, except on the apical half of the rostrum.

EUCALYPTOCIS FASCICULATUS, n. sp.

Black; antennæ of a dingy-red. Densely clothed with black scales, conspicuously variegated with white. Upper-surface with numerous black fascicles.

*Head* with dense normally-concealed punctures. Rostrum about as long as prothorax, sides incurved to middle; with coarse partially-concealed punctures. *Prothorax* with upper-surface almost equilaterally triangular: with dense concealed punctures. *Elytra* about twice and one-half the length of prothorax; with two rows of large partially-concealed punctures; interstices somewhat uneven. Length, 2 3/4 mm.

*Hab.*—Tasmania: Mount Wellington (H. H. D. Griffith).

On the elytra the white scales clothe the extreme base, portion of the sides, and an oblique median fascia from each side to the third interstice. On the under-surface and legs the scales are silvery, but the femora at apex and tibiæ at base are clothed with black scales. On the head some of the scales are black, on the basal half of rostrum they are white. On the prothorax there are four fascicles across middle and two at apex, with a few erect scales at the sides. On the elytra the fascicles are larger and confined to the second to seventh interstices; they are all black, except a few about apex and sides.

ANCOCIS, n. g.

*Head* moderately large and round. Eyes rather small, distant, facets of rather small size. Rostrum rather short and wide. Scape short and stout, inserted nearer base than apex of rostrum: two basal joints of funicle moderately long; club ovate. *Prothorax* transverse, depressed, strongly sculptured. *Scutellum* small. *Elytra* depressed, shoulders rounded, sides subparallel except at base and apex, base strongly trisinate. *Pectoral canal* deep and wide, terminated at base of front coxæ. Mesosternal receptacle rather narrow between coxæ, dilated and almost truncate in front; cavernous. Metasternum about as long as the following segment: episterna wide. *Abdomen* with distinct sutures, first segment longer than

(42) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.



second and third combined, its apex incurved to middle, second longer than third and fourth combined. *Femora* short, stout, and compressed, grooved and edentate; *tibiæ* short and compressed, very wide near base, and strongly narrowed to apex; *tarsi* long, third joint wide and deeply bilobed.

A curious genus of the *Chætectetorus* group, but the legs very different to those of other genera of that group. The rather finely faceted eyes would associate the genus with *Ephrycinus* in my table of the allied genera, but the legs and metasternum are very different. The strongly sculptured prothorax is suggestive of affinity with *Pseudapries*, near which it should be placed: but the species of that genus have coarsely faceted eyes and very different legs, etc. The grooves on the femora are very distinct on the apical half, where the surface is glabrous, but towards the base they are very feeble.

ANCOCIS COLLARIS, n. sp.

Black; antennæ and tarsi more or less reddish. Very densely clothed with muddy-brown scales, closely applied to derm; with a few stout but short ones scattered about. Each elytron with a distinct irregular whitish spot at about the basal third. Metasternum and basal segment of abdomen, except at sides, and medio-basal portion of second segment, with dense, paler, and subsetose scales.

*Head* with dense concealed punctures. Ocular fovea fairly large. Rostrum not as long as prothorax, sides moderately incurved to middle, widest near, but not at, base; punctures dense at tip, but elsewhere concealed. *Prothorax* about one-third wider than long, base strongly bisinuate; a deep subtriangular notch in middle of each side; middle with a wide impression, bounded on each side of apical half by a conspicuous ridge, along middle with a feeble semi-double ridge; towards each side on basal half with a deep oblique groove, feebly connected with the base and lateral notch; towards each side on apical half with a double irregular impression; punctures concealed. *Elytra* closely applied to prothorax, and about thrice as long; with rows of large partially-concealed punctures; odd interstices with numerous small tubercular elevations. Punctures of *under-surface* and of legs very dense, but scarcely traceable through clothing. Length,  $8\frac{1}{2}$  mm.

*Hab.*—Queensland or New South Wales (H. W. Brown).

Except for the antennæ, tip of rostrum, and parts of the legs the surface is everywhere densely clothed. On the upper-surface the stout scales are but little elevated above the others, so that, although compacted together in places, they do not appear to form distinct fascicles. The tubercular elevations are more distinct on the third and fifth interstices than on the

others, but there are a few feeble ones even on the suture. The curious clothing, like a large depressed pad, on part of the under-surface (the derm beneath it is depressed) may be a sexual character; the type is evidently a male

TYLOCIS, n. g.

*Head* partially concealed from above. Eyes small, widely separated, finely faceted, triangular in front. Rostrum of moderate length and rather thin, lightly curved. Antennæ rather thin; scape inserted nearer base than apex of rostrum, much shorter than funicle; two basal joints of funicle elongate; club ovate. *Prothorax* transverse, base bisinuate, apex produced. *Scutellum* indistinct. *Elytra* subparallel-sided to beyond the middle, base trisinuate. *Pectoral canal* deep and wide, terminated between four front coxæ. Mesosternal receptacle rather large, raised in front, emargination semicircular; cavernous. Metasternum about half the length of the following segment. *Abdomen* large, first segment as long as second and third combined, third and fourth combined shorter than second, but longer than fifth. *Legs* short; femora moderately stout, neither grooved nor dentate; tibiæ lightly compressed; tarsi rather short, fourth joint elongate, squamose and setose.

The typical species at first sight appears to belong to *Chetectetorus*, near which the genus should be placed, but the eyes are finely faceted and the metasternum very short. In my table of the allied genera would be associated with *Ephrycinus*, but the only known species of that genus has its metasternum longer than the following segment and its elytra non-tuberculate. *Tituacia* has a very short metasternum, but is otherwise very different. The clothing of the metasternum is so dense that its lateral sutures are scarcely traceable; the episterna, however, are very narrow in the middle, but dilated towards the ends.

TYLOCIS SQUAMIBUNDUS, n. sp.

Very densely clothed with dark muddy-brown scales, somewhat paler near shoulders and on under-surface, legs, head, and rostrum. Upper-surface with stout and usually sooty scales scattered about, and condensed into fascicles; under-surface and legs with stout and usually paler scales set amongst the others.

*Head* with concealed but evidently dense punctures; ocular fovea round and distinct through clothing. Rostrum almost as long as prothorax, sides feebly incurved to middle; with very dense concealed punctures. *Prothorax* rather lightly transverse, sides on basal half rather feebly rounded, apex about half the width of base; surface uneven and feebly tuberculate beneath fascicles; with a distinct scutellar lobe; with

coarse punctures traceable through clothing. *Elytra* oblong to posterior declivity, about one-third wider than prothorax; with rows of very large punctures; with numerous fascicles, supported by feeble tubercular swellings. *Abdomen* with punctures traceable through clothing on two basal segments. Length,  $6\frac{1}{4}$ - $6\frac{1}{2}$  mm.

*Hab.*—New South Wales: Richmond River (W. W. Froggatt); Tweed River (H. W. Brown).

The antennæ, claws, and tibial hooks, the only parts not densely clothed on the two typical specimens, are of a dingy-red. There are four fascicles on each of the third and fifth interstices, the most distinct being at the summit of the posterior declivity, but there are others towards the sides and apex, and a few small ones even on the suture. On each side on and near the shoulder the clothing is distinctly paler than elsewhere, and appears to form numerous small, irregular, round lumps, from the smaller ones of which stout scales are absent.

#### METYRUS ALBICOLLIS, Germ.

Var. A. White markings on prothorax consist of a small medio-basal subtriangular spot, and a still smaller spot near, but not on, each hind angle. *Elytra* with base narrowly margined, and with a conspicuous, irregular, apical spot. Inner side piece of mesosternum with white scales. Whitish scales rather sparsely scattered about on under-surface and legs.

*Hab.*—Victoria: Beaconsfield, on *Loranthus* (H. H. D. Griffith from E. Jarvis).

Var. B. White markings on prothorax consist of a small medio-basal spot, and a larger angular spot on each hind angle. *Elytra* with a small spot on each side of apex. Under-surface, legs, head, and rostrum with obscurely whitish scales scattered about singly or in feeble clusters.

*Hab.*—Australia (Albert Bovie, from — Plason).

Var. C. Dingy-whitish markings on upper-surface consist of a small medio-basal spot on prothorax and a feeble elongated spot on each side of apex of *elytra*. Rest of body and legs with almost uniformly dingy-brown scales, the fascicles but little darker.

*Hab.*—New South Wales: Sydney.

#### PSEUDOMETYRUS BICAUDATUS, n. sp.

Black; antennæ and tarsi more or less reddish. Densely clothed with light-brown or muddy-brown scales, with sooty ones on the prothoracic and on the median tubercles of *elytra*, clothing most of abdomen and on middle of metasternum.

*Head* with small partially-concealed punctures. Rostrum moderately long and not very thin, sides lightly incurved to middle, with dense punctures rather small at apex, becoming larger to and more or less concealed on basal half; with a feeble median ridge. Scape inserted about two-fifths from apex of rostrum, slightly shorter than funicle; first joint of funicle slightly longer than second. *Prothorax* strongly transverse, apex about half the width of middle, with four obtuse tubercles, crowned with fascicles across middle, and two at apex; with a very feeble median swelling; with numerous rather small and usually concealed punctures. *Elytra* not much but distinctly wider than prothorax, base trisinate, sides subparallel to beyond the middle; with irregular rows of large punctures, in places almost concealed; second interstice with two large tubercles close together about the middle, fourth with two large ones: the hind one halfway between those on second, the other at the basal third; fifth with a large one halfway down the posterior declivity; some smaller ones elsewhere, but each elytron at apex produced in the form of a conical tubercle; a few small granules scattered about. *Femora* stout, strongly dentate; tibiae compressed, lower edge of front pair bisinuate. Length, 10 mm.

*Hab.*—Queensland: Mount Tambourine (H. Hacker, his No 637).

The rostrum is moderately curved, and is stouter than in most species of the genus. The metasternum is also a trifle shorter, instead of a trifle longer than the following segment, as in others of the genus. The type appears to be a male.

#### PSEUDOMETYRUS LAMINATUS, Lea.

A specimen from Hobart belongs to this species, but differs from the type in being smaller (6 mm.) and somewhat darker. At a glance it appears to belong to *Menios internatus*, but the facets of its eyes are much smaller than in that species.

#### MENIOS ALTERNATUS, n. sp.

♂. Reddish-castaneous; antennæ and tarsi somewhat paler. Densely clothed with light-brown or fawn-coloured scales, more or less distinctly variegated with paler and darker ones; with rather short, stout, suberect scales scattered about, and in places compacted into fascicles. Under-surface and legs with paler and more uniformly-coloured scales than on upper-surface.

*Head* with dense concealed punctures. Rostrum rather wide, lightly curved, sides feebly incurved to middle; punctures dense, and not very small, on apical half, elsewhere concealed. Antennæ not very thin; scape inserted slightly

nearer apex than base of rostrum, and slightly shorter than funicle. *Prothorax* rather strongly transverse, base lightly bisinuate and about twice the width of apex; with dense, round, concealed punctures. *Elytra* about one-fourth wider than prothorax, parallel-sided to apical fourth; with rows of large more or less concealed punctures, in light striæ. *Under-surface* with dense concealed punctures. Metasternum and following segment of equal length along middle. *Legs* rather short, front femora feebly dentate, the others more acutely and distinctly so. Length, 3-3½ mm.

♀. Differs in having the rostrum thinner, shining, with much smaller punctures, concealed only about extreme base; scape inserted in middle of rostrum, and abdomen more convex.

*Hab.*—Queensland: Mulgrave River and Cairns (H. Hacker).

The slightly curved rostrum associates this species with *nebulosus* and *albifasciatus*, from which it is readily distinguished by the absence of elytral fascicles. On two specimens the scales on the upper-surface are almost uniform in colour, neither the paler nor darker ones being at all distinct. But there appears to be usually a fairly large and somewhat sooty medio-lateral spot on each elytron and some small ones elsewhere, including two very feeble ones at the base of the prothorax. The pale markings consist of feebly-defined spots irregularly distributed, but on two specimens a vague pale fascia can be traced across summit of posterior declivity. The stout scales form four feeble fascicles across middle of prothorax and two at apex. On the elytra they are rather numerous, but confined to the odd interstices. They are seldom of the same shade of colour as the flat scales amongst which they are set, and they appear to be very easily abraded. The specimens formerly in Mr. Hacker's collection (his Nos. 133 and 1085) are now in the Berlin Museum.

#### METEURCULUS BIMACULATUS, Lea.

Var. A. Two specimens from Mackay differ from the types in having the clothing of the upper-surface of a uniform sooty-brown, except for the pale median spots.

Var. B. A specimen from North Queensland also has the clothing of the upper-surface sooty-brown, but the elytral spots of pale scales are entirely absent.

#### ETHOCIS, n. g.

*Head* moderately large, partially concealed. Eyes rather small, widely separated, coarsely faceted. Rostrum rather short and wide. Scape inserted nearer apex than base of rostrum, somewhat shorter than funicle; two basal joints

of funicle moderately long, the others transverse; club briefly ovate. *Prothorax* transverse, apex much narrower than base; ocular lobes moderately prominent. *Scutellum* distinct. *Elytra* not much wider than prothorax, subcylindrical to near apex, base trisinate. *Pectoral canal* deep and wide, terminated between four front coxæ. Mesosternal receptacle strongly raised in front, emargination strongly transverse: cavernous. Metasternum along middle the length of basal segment of abdomen; episterna rather wide. *Abdomen* with two basal segments large. *Legs* rather long; femora neither grooved nor dentate.

As the metasternum, in the two species referred to this genus, appears (along its middle) to be exactly the length of the following segment, the genus could be referred to neither C nor CC in the table of genera allied to *Chætetetorus*.<sup>(43)</sup> but regarding it as belonging to C, it would be associated with *Metelyrculus* (which genus, in fact, appears to be its closest ally), but differs in the conspicuously elevated mesosternal receptacle and absence of femoral grooving. Regarding it as belonging to CC, it would be associated with *Menios*, but the femora are edentate, and scape inserted distinctly nearer to apex than to base of rostrum. In general appearance *discicollis* at first appears to belong to *Phleoglymma*, but the mesosternal receptacle is cavernous and the femora edentate; *bifasciatus* looks like a *Menios*, but its femora are edentate.

Prothorax with a conspicuous median patch of

dark scales	..	..	..	..	..	..	..	..	..	<i>discicollis</i>
Prothorax without such a patch	..	..	..	..	..	..	..	..	..	<i>bifasciatus</i>

#### ETHOCIS DISCICOLLIS, n. sp.

Obscure reddish-brown; antennæ and tarsi paler. Densely clothed with whitish, or somewhat greyish, scales, more or less variegated with sooty ones.

*Head* with dense normally-concealed punctures. Rostrum somewhat shorter than prothorax, stout and somewhat dilated to apex; punctures normally concealed. *Prothorax* moderately transverse, sides somewhat rounded, and diminishing in width from base to apex; with dense concealed punctures. *Elytra* more than twice the length of prothorax; with almost concealed rows of punctures. *Under-surface* with dense concealed punctures. Length,  $3\frac{3}{4}$  mm.

*Hab.*—New South Wales: National Park (H. J. Carter).

On the prothorax there is a wide longitudinal patch, like a depressed fascicle, of sooty scales, somewhat dilated to the base (seen from behind or in front this patch appears to have

(43) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.

a depressed median line), and the sides have numerous, erect, dark scales. On the elytra there are five elongated patches (or depressed fascicles) of sooty scales: one on the suture on the posterior declivity, and two on the third interstice of each elytron, of the latter one extends from the base to the basal third, the other is postmedian and somewhat shorter; elsewhere there are feeble smoky patches, one of which causes the pale scales to appear to form an oblique fascia from the side to the commencement of the postmedian sooty patch. On the apical half of abdomen the clothing is slightly infuscated. The derm of this, and of the following species, is normally entirely concealed, but the colour of the same can be seen where a slight amount of abrasion has taken place. As with many other densely clothed species, however, it is probably variable.

*ETHOCIS BIFASCIATUS*, n. sp.

Obscure reddish-brown; antennæ somewhat paler. Densely clothed with smoky-grey or mouse-coloured scales, paler on under- than upper-surface; elytra with two pale fasciæ; with numerous stout erect scales scattered about, and in places condensed into feeble fascicles. Length, 4 mm.

*Hab.*—New South Wales: Mount Victoria (A. M. Lea).

The outlines and sculpture are exactly as described in the preceding species (each is represented by a unique and probably male specimen), but the clothing is so different that the two species can be easily distinguished. The pale elytral fasciæ are distinct to the naked eye, but not sharply defined under a lens, the subbasal one commences near each shoulder, and is oblique to the suture at the basal third; the other is somewhat curved, and is placed at the summit of the posterior declivity. There are six feeble fascicles on the prothorax: four across middle and two at apex. On the elytra there are no distinct fascicles, but here and there a few of the numerous upright scales are compacted together.

*SCOTINOCIS*, n. g.

*Head* comparatively large, partially concealed from above. Eyes widely separated, rather coarsely faceted. Rostrum not very short, moderately wide, lightly curved. Antennæ not very thin, inserted about middle of rostrum; scape distinctly shorter than funicle, first joint of funicle moderately long; club elliptic-ovate. *Prothorax* lightly transverse, sides rounded, apex produced. *Scutellum* distinct. *Elytra* parallel-sided to beyond the middle. *Pectoral canal* deep and wide, terminated between four front coxæ. Mesosternal receptacle lightly raised, emargination widely U-shaped; cavernous. Metasternum almost as long as the

following segment; episterna rather narrow but distinct. *Abdomen* fairly large, first segment as long as second and third combined, its suture with second straight. *Legs* rather short; femora feebly dentate, not grooved; tibiae lightly compressed; tarsi with fourth joint elongate and sparsely setose.

The typical species at a glance resembles some of the species of *Storeus* of the *Erirhinides*, but it differs from *Pseudostoreus* in the cavernous mesosternal receptacle. In fact, it is not even close to that genus, being a member of the *Chæctetectorus* group. The eyes are moderately, almost coarsely, faceted, and the metasternum is just a trifle shorter than the following segment, characters which, in my table of the group <sup>(44)</sup> associate the genus with *Acrotychreus*, to which it is not at all close. But regarding the metasternum as slightly longer it would be associated with *Menios*, near which, perhaps, it should be placed. The dentate femora distinguish it from *Achopera*; the teeth, however, are rather indistinct.

#### SCOTINOCIS SAGITTIFER, n. sp.

Castaneous, in parts almost black; antennæ paler than rostrum. Densely clothed with greyish scales, variegated with sooty patches; under-surface and legs with whitish scales, but the legs feebly ringed with darker ones; with stout suberect scales, in places compacted into feeble fascicles.

*Head* with very dense concealed punctures. Rostrum about as long as prothorax, sides lightly incurved to middle; with dense and rather coarse punctures, concealed behind antennæ, and leaving a feeble median line in front of same. *Prothorax* rather lightly convex, base truncate; with crowded and usually concealed punctures. *Elytra* not much but distinctly wider than prothorax, base very lightly trisinate; with rows of large more or less concealed punctures, becoming smaller posteriorly. *Under-surface* with crowded partially-concealed punctures. Length,  $2\frac{1}{2}$  mm.

*Hub.*—New South Wales: Guyra (H. J. Carter).

The stout scales are thickened or clubbed at their ends, and are usually dark, even when set amongst pale ones. On the prothorax there is a rather large medio-basal sooty patch, with each of its front angles marked by a small fascicle (these being across the middle of the disc). On the elytra there is a rather large sooty patch, commencing at the base, encroached upon by pale scales at the basal third, and then obliquely dilated and terminated, so as to present a rough resemblance to a broad-headed arrow, whose tip is on the suture just beyond

(44) Proc. Linn. Soc., N.S.W., 1909, pp. 594-595.



the middle. On the patch four very feeble fascicles may be traced. The derm beneath the sooty scales is almost black.

TYCHREUS INSULARIS, n. sp.

Blackish: antennæ of a dingy-red. Densely clothed with soft, white, woolly-looking scales.

*Eyes* large and finely faceted. Rostrum moderately long, very feebly curved, sides feebly incurved to middle; apical half shining and with dense, but not large, punctures; basal half with punctures concealed. Scape inserted two-fifths from apex of rostrum, the length of funicle. *Prothorax* lightly transverse, sides strongly rounded, base strongly bisinuate, disc uneven: with dense concealed punctures. *Elytra* somewhat wider than prothorax, parallel-sided to beyond the middle: with rows of large partially-concealed punctures; second, third, fourth, and sixth interstices in places feebly elevated. *Mesosternal receptacle* rather suddenly elevated at base, and then sloping to apices. *Femora* stout, strongly dentate. Length,  $6\frac{1}{2}$  mm.

*Hab.*—Lord Howe Island (Australian Museum).

In general appearance very close to *lanifer*, but rostrum of the type (evidently a male) with dense clothing to the exact middle: in that species the clothing of the male extends beyond the middle, and in the female terminates before it. The raised parts of the elytra are also evenly raised. On the other species the raised parts appears to be more of the nature of obtuse tubercles supporting fascicles, and their clothing is seldom of a different shade of colour to those of the surrounding parts. The second, third, and fourth interstices near base, and again near summit of posterior declivity of the present species, are lightly elevated and with clothing of a pale-fawn colour; and there is similar clothing on the suture connecting the patches. Rings can be traced on the legs, but they are extremely faint. On the prothorax there are four feeble swellings supporting feeble fascicles across middle, and one in middle of base.

TYCHREUS NIGRONOTATUS, n. sp.

♂. Of a dingy-red. Densely clothed with pale-brown or fawn-coloured scales, with some stouter suberect ones scattered about, and in places condensed into fascicles, the stout scales mostly sooty; with some velvety-black patches. Legs feebly variegated.

*Eyes* finely faceted. Rostrum moderately stout, sides lightly incurved to middle; sculpture concealed on basal third, elsewhere shining, and with clearly-defined punctures. Scape rather short, shorter than funicle, inserted nearer base than apex of rostrum; first joint of funicle distinctly longer than

second. *Prothorax* rather lightly transverse, sides moderately rounded, base feebly bisinuate; punctures normally concealed. *Elytra* moderately long, not much wider than prothorax, parallel-sided to beyond the middle, subtuberculate beneath fascicles; with rows of large partially-concealed punctures. *Mesosternal receptacle* rather strongly elevated, base large and ridged along middle; emargination with thin U-shaped walls. *Femora* feebly dentate. Length,  $3\frac{1}{2}$  mm.

♀. Differs in having the rostrum thinner, with much smaller and sparser punctures, and less of the base clothed.

*Hab.*—New South Wales: Acacia Creek (H. J. Carter).

The antennal insertion is as in *reversus*, but the two species are otherwise very different. The base of the mesosternal receptacle is wider than in the more typical species of the genus. There is an elongated velvety patch or loose fascicle on each side of the middle on the basal half of the prothorax. On the elytra there are three on the third interstice, one on the fifth, and two on the seventh; the largest of all is the sub-basal one on the third, and this is so thickly beset with erect blackish scales that it could fairly be regarded as a fascicle. On the elytra also there are elongated spaces on which the scales are slightly paler than the surrounding ones.

#### TYCHREUS ABERRANS, n. sp.

Of a dingy reddish-brown; antennæ and tarsi paler. Densely clothed with scales, mostly fawn-coloured, but variegated with sooty and white; with stout scales scattered about and in places condensed into fascicles.

*Eyes* large and coarsely faceted. Rostrum moderately long, sides lightly incurved to middle; basal two-fifths with concealed sculpture, elsewhere shining and with rather coarse punctures. Scape shorter than funicle, inserted in middle of rostrum; club ovate. *Prothorax* moderately transverse, apical third much narrower than elsewhere, base lightly trisinuate; punctures normally concealed. *Elytra* moderately long, decidedly wider than prothorax, parallel-sided to near apex, subhumeral incurvation scarcely noticeable; with rows of large, almost concealed punctures; subtuberculate beneath fascicles. *Mesosternal receptacle* widely U-shaped, walls thin and feebly raised. Four hind femora lightly dentate, the others not at all. Length,  $3\frac{1}{2}$  mm.

*Hab.*—New South Wales: Comboyne (W. H. Muldoon).

The edentate front femora<sup>(45)</sup> and coarsely faceted eyes are aberrant in *Tychreus*; but as the species in general appearance is very close to *dilaticollis*, *reversus*, and *fumosus*, it

(45) The teeth of the four hind femora are very minute, and could easily be overlooked.

appears better to refer it to that genus rather than to a new one. From *Metagrulus* it differs in the metasternum and legs. *Menios* has the mesosternal receptacle larger, and the walls not U-shaped. The scales on the prothorax and under-surface are large, individually distinct, and completely conceal the derm; on the elytra the derm is also concealed, but the scales are not individually traceable. On the prothorax there is a large median patch of dark scales, but somewhat variegated at the base; it also has six feeble fascicles. The elytral clothing is irregularly mottled with sooty, more so on the hind than the front half; but there is a conspicuous patch of snowy scales at the summit of posterior declivity. On the third interstice there is an elongated black fascicle at the base, but with its apex paler. On the under-surface the clothing is feebly mottled. The elytral punctures in the striæ each contain a distinct scale, but the punctures themselves are normally concealed.

#### TYCHREUS CAMELUS, Pasc.

A common variety of this species (which I have often reared from dead limbs of sassafras) has the greater portion of the base of the elytra and of the posterior declivity clothed with beautiful moss-green scales, occasionally having a slight metallic lustre.

#### SYMPIEZOSCELUS NORFOLCENCIS, n. sp.

♂. Dark reddish-brown, sometimes almost black; antennæ and tarsi paler. Clothed with soft fawn-coloured scales.

*Head* with rather dense round punctures. *Rostrum* rather short and stout; at base dilated at sides, somewhat ridged along middle, and with rather coarse punctures; almost parallel-sided in front of antennæ, and with punctures becoming very small towards apex. *Scape* stout, inserted distinctly nearer base than apex of rostrum, scarcely half the length of funicle and club combined; two basal joints of funicle rather long, first longer than second. *Prothorax* somewhat flattened, subconical, with numerous small punctures; with a very short carina in the middle of a small medio-basal depression. *Elytra* not much wider than prothorax, sides almost parallel to beyond the middle, base strongly trisinate; with rows of large round punctures, becoming smaller and narrower but in deeper striæ posteriorly; interstices almost impunctate. *Metasternum* with a distinct fovea behind each middle coxa; episterna with rather dense punctures. *Abdomen* with some large punctures on basal segment, and rather dense ones on apical segment. *Femora*

wide, tibiae each with apical hook strong, and with an acute tooth near outer apex. Length,  $6\frac{1}{2}$ - $8\frac{1}{2}$  mm.

♀. Differs in having the rostrum slightly longer and much thinner, base less inflated, and with sparser punctures, elsewhere highly polished and impunctate or almost so; scape even shorter and inserted nearer base of rostrum, and basal segment of abdomen convex instead of depressed in middle.

*Hab.*—Norfolk Island (J. C. Wiburd).

Smaller and usually darker than *spencei*, rostrum somewhat thinner, less conspicuously ridged at base, with the sub-lateral sulci smaller and pectoral canal less encroached upon by front coxae. The clothing on fresh specimens is probably rather dense, but it appears to be particularly liable to abrasion, as the majority of the twenty-three specimens before me are very feebly clothed, and some are quite glabrous on the upper-surface and almost so on the under-surface and legs. On the under-surface and legs there are some thin setae, and these are less deciduous than the scales. On some specimens the prothorax has an impunctate median line. The size seems to be independent of sex.

SYMPIEZOSCELUS SPENCEI, Waterh.; var. MINOR, n. var.

Mr Carter has sent twenty specimens from Dorriga (New South Wales) that differ from the typical form of *spencei* in being considerably smaller ( $6\frac{1}{2}$ -9 mm.), but otherwise much the same. These specimens closely resemble *norfolcensis*, and perhaps indicate that that form should be regarded as a variety only.

WIBURDIA DENTIPES, n. sp.

Black, in places obscurely diluted with red; antennae and tarsi reddish. Moderately clothed with light-brown and sooty scales: on the under-surface longer and paler than on upper-surface. Prothorax with four fascicles of short, sooty scales across middle, the two median ones continued to apex; elytra with three on the third interstice, two on the fifth, and one on the second.

*Head* rather strongly convex; with very dense partially-concealed punctures. Rostrum rather short and straight, sides feebly dilated from base to near apex, lower walls of scrobes cut away at base; with dense and not very small punctures, in places feebly confluent. Antennae rather stout; scape inserted about two-fifths from apex of rostrum, somewhat shorter than funicle; second to seventh joints of funicle transverse. *Prothorax* moderately transverse, base strongly bisinuate and not twice the width of apex, which is truncate and subtubular, basal two-thirds gently rounded; with very dense punctures. *Scutellum* distinct. *Elytra* distinctly but

not much wider than prothorax, base strongly trisinate, sides parallel to beyond the middle: with rows of rather large oblong punctures; interstices much wider than seriate punctures, with dense punctures, and each with a row of small granules, third somewhat dilated and thickened about base. *Under-surface* with dense punctures. Basal segment of abdomen depressed in middle of apex. Four hind femora lightly but distinctly dentate. Length, 7 mm.

*Hab* —Victoria: Gippsland (C French).

In general appearance extremely close to small specimens of *scrobiculata*, but the four hind femora distinctly dentate, although the teeth are small; the front pair have the median ridge suddenly terminated at the apical notch, but not elevated into a tooth.

#### XESTOCIS, n. g.

*Head* of moderate size. Eyes subtriangular, widely separated, coarsely faceted. Rostrum moderately long, somewhat curved; scrobes open at lower edge of extreme base. Antennæ moderately long; scape slightly shorter than funicle; funicle with two basal joints moderately long, the others transverse, club ovate. *Prothorax* transverse, sides rounded, base bisinuate. *Scutellum* distinct. *Elytra* parallel-sided to near apex, or not. *Pectoral canal* deep and wide, terminated almost at front coxæ. Mesosternal receptacle narrow between middle coxæ, but strongly dilated in front, emargination strongly transverse; cavernous. *Metasternum* elongate; episterna conspicuous. *Abdomen* with two basal segments large, sutures of all distinct, that between first and second curved in middle. *Legs* rather short; femora stout, strongly dentate; tibiæ compressed, the middle pair strongly dentate on the outer edge at middle.

Apparently one of the connecting genera between the *Chaetectorus* and *Psepholar* groups. In my table of the genera of the *Psepholar* group it would be placed with *Psepholacipus*, from which it differs in the dentate femora and different front and hind tibiæ. The scrobes are open at the eyes on their lower side as in *Zeneudes* and *Oreda*. In the table of the genera of the *Chaetectorus* group it would be placed with *Sympiezoscetus* and *Mitrastethus*, which have edentate femora and very different middle tibiæ.

Seriate punctures at base of elytra as wide as

interstices ... .. *niger*  
These punctures much narrower than interstices *castaneus*

#### XESTOCIS NIGER, n. sp.

Black; elytra in parts feebly diluted with red; antennæ and tarsi reddish. Moderately clothed

*Head* round; with rather numerous non-confluent punctures. Rostrum somewhat shorter than prothorax, parallel-sided; with coarse punctures at base, becoming sparser and smaller in front, but all partially concealed. Scape inserted about two-fifths from apex of rostrum. *Prothorax* moderately transverse, disc with fairly numerous punctures of moderate size, becoming larger and denser on sides; with an impunctate median line, becoming carinate at base. *Elytra* almost parallel-sided to near apex, very little wider than prothorax; basal third with large punctures, in feeble striæ, elsewhere with much smaller punctures but the striæ rather more distinct. interstices sparsely and minutely granulate. Length,  $5\frac{1}{4}$ - $5\frac{1}{2}$  mm.

*Hab.*—Queensland (H. J. Carter).

One of the specimens before me is almost entirely abraded; the other is moderately clothed with rather elongate scales (stouter on the elytra than elsewhere) mostly of a dingy white. The prothoracic punctures, although not very dense on the disc, have a slight tendency there to become longitudinally confluent. Mr. Carter has also taken the species at Acacia Creek in New South Wales.

#### XESTOCIS CASTANEUS, n. sp

Bright-castaneous, parts of under-surface stained with black. Rather lightly clothed with rather thin stramineous scales or setæ, becoming fairly dense in parts.

*Head* round, punctures not very dense, but becoming denser and larger between eyes. Rostrum slightly shorter than prothorax, sides very feebly incurved to middle; with rather coarse punctures at sides and base, an impunctate line along middle. Antennæ inserted in exact middle of rostrum. *Prothorax* moderately convex; disc with small and sparse punctures, the sides with more numerous ones; with a very feeble median line, but the same carinate at extreme base. *Elytra* very little wider than prothorax, basal half almost parallel-sided; with rows of fairly large punctures, becoming smaller before middle, and almost disappearing posteriorly; striation absent. Length,  $4\frac{1}{2}$  mm.

*Hab.*—Norfolk Island (J. C. Wibur).

Smaller and paler than the preceding species, with less parallel-sided elytra and much smaller punctures. On the type the clothing is denser on posterior declivity of elytra, on abdomen, mesosternum, parts of legs, and base of rostrum than elsewhere, but this may be due to partial abrasion, to which species of the group are particularly liable.

## PSEPHOLAX.

In this genus the rostrum is subject to considerable variation. As its headquarters are in New Zealand, comparatively few species occurring in Australia, it appears desirable to refer several aberrant species to it rather than to propose new genera for their reception, as such genera would probably in time be treated as of sectional importance only. The three first species here described all have the rostrum longer than wide, as in *humeralis* and *leoninus*; in the others it is transverse.

In *subconicollis* the front tibiæ are unusually thin, the median tooth of the middle tibiæ is more conspicuous than usual, and the subapical outer tooth very small.

In *lateripennis* and *basalis* the mesosternal receptacle has its sides distinctly produced, so that the apex is semicircularly emarginate; in *humeralis* and *leoninus* the apices are much less produced, and consequently the emargination is much more transverse; in the other Australian species the emargination is very feeble or altogether absent. In *leoninus* the walls of the pectoral canal are rather acutely margined at the apical fifth, between that portion and the coxæ being strongly rounded; in *lateripennis* and *basalis* the walls for about one-half of their length are rather acutely margined.

## PSEPHOLAX SUBCONICOLLIS, n. sp.

Rather pale-castaneous. Upper-surface rather densely clothed with short stramineous scales, variegated with a sooty spot on each side of base of prothorax, and some irregular spots on elytra. Under-surface and legs with longer and sparser clothing, becoming golden-setæ in places.

*Head* with dense and rather small punctures; a shallow depression between eyes, but with a small, deep, median fovea. Rostrum somewhat longer than greatest width, which is near apex; with rather dense partially-concealed punctures, becoming smaller and sparser about apex. Scape stout, not much shorter than funicle; club rather large and ovate. *Prothorax* rather strongly transverse, base bisinuate, sides diminishing in width from base to apex; apex scarcely half the width of base; with dense normally-concealed punctures. *Elytra* subcordate, base trisinate, sides rounded and widest near base; with rows of fairly large punctures, in distinct striæ; the interstices with dense punctures and small granules, all partially concealed. *Under-surface* with rather sparse punctures, becoming dense on apical segment of abdomen. *Femora* stout; hind pair strongly, middle moderately, front lightly dentate; front tibiæ long and thin, hind ones somewhat

stout, middle ones each with a strong, triangular, median tooth on outer edge. Length,  $4\frac{3}{4}$ - $5\frac{1}{2}$  mm.

*Hab.*—Queensland: Coen River (H. Hacker).

There is a feeble irregular sooty blotch on the elytra, extending from the suture to the fourth interstice; on the posterior declivity there are also some small irregular spots.

*PSEPHOLAX LATERIPENNIS*, n. sp.

Dark chocolate-brown.

*Head* with coarse partially-concealed punctures. Rostrum about once and one-half as long as greatest width; with dense and rather coarse punctures, partially concealed towards base, towards apex smaller but clearly defined. Scape not much shorter than funicle, club rather large and briefly ovate. *Prothorax* moderately transverse, sides moderately rounded, but at apex suddenly narrowed and subtubular; with very dense punctures. *Elytra* not much wider than prothorax, but somewhat dilated near base, which is strongly trisinate; with rows of not very large punctures, in narrow striæ; interstices with dense punctures and numerous small granules. *Under-surface* with moderately dense punctures. Mesosternal receptacle acutely produced on each side in front. *Femora* stout, feebly dentate; middle tibiae each with a strong triangular median tooth on outer edge, and a fairly large subapical outer one. Length,  $6-6\frac{1}{2}$  mm.

*Hab.*—Queensland: Brisbane (R. Illidge); Mount Tambourine.

Nearer *humeralis* than any other described species, but elytral sculpture very different, rostrum longer, etc. The clothing varies from pale-golden to stramineous or ochreous. On both specimens it is very dense on the sides just behind the shoulders and moderately dense on the posterior declivity, the rest of the elytra being almost glabrous (probably due to abrasion). Each prothoracic puncture contains a short scale. On the flanks of the sterna and tip of first abdominal segment the scales are stouter than elsewhere; on the rest of the under-surface and legs the clothing is more or less setose. The finer sculpture of the elytra is probably concealed on specimens in perfect condition.

*PSEPHOLAX BASALIS*, n. sp.

Chocolate-brown. Upper-surface moderately clothed with short more or less golden scales, in places obscurely variegated with obscure sooty patches. Sides of sterna with paler and wider scales; rest of under-surface and the legs with setose clothing.



*Head* with dense and moderately coarse punctures. *Ros-trum* not much longer than greatest width; base with punctures as on head, about apex with smaller but more clearly-defined ones. *Prothorax* moderately transverse, sides moderately rounded, but apex greatly narrowed and subtubular; with very dense punctures. *Elytra* not much wider than prothorax, basal half almost parallel-sided, base strongly trisinate; with rows of fairly large punctures, in rather narrow striae; interstices with dense punctures and numerous small granules, third dilated about base, raised, and with more numerous granules than elsewhere, but the base of second and fourth have almost as numerous granules. *Under-surface* with rather dense but somewhat unevenly distributed punctures. Walls of pectoral canal rather acutely margined in front. Mesosternal receptacle with sides acutely produced in front. *Femora* stout, rather lightly dentate; middle tibiae as in preceding species. Length, 8 mm.

*Hab.*—Queensland: Mount Tambourine (R. Illidge).

Close to the preceding species but larger, elytra with denser clothing, the interstices somewhat narrower, with coarser punctures and larger granules, apex of prothorax wider and walls of pectoral canal somewhat different in front. On the type there are faint remnants of a median prothoracic line.

#### PSEPHOLAX MARMORATUS, n. sp.

Reddish-brown; antennae and tarsi reddish. Densely clothed with short, stout, pale-ochreous or stramineous scales, variegated with spots of chocolate-brown. *Under-surface* with almost white scales, becoming setose along middle and on parts of legs.

*Head* with dense but rather small punctures. *Rostrum* distinctly transverse; in front of antennae with clearly-defined punctures, elsewhere partially concealed. *Scape* distinctly shorter than funicle; club rather large and briefly ovate. *Prothorax* rather strongly convex, lightly transverse, apex rather more than half the width of base, and feebly incurved to middle, base strongly bisinuate; with dense and rather small partially-concealed punctures. *Elytra* with outlines almost continuous with those of prothorax, sides feebly dilated near shoulders, base with median sinus strong but the sublateral ones feeble; with rows of fairly large punctures, in conspicuous striae; interstices with dense normally-concealed punctures and with rows of small granules, but at base the granules are rather numerous, especially on the third. *Under-surface* with punctures normally concealed. Mesosternal receptacle rounded in middle of apex. *Femora* stout, rather lightly dentate; middle tibiae each with two strong outer teeth, of which the

subapical one is larger than the submedian one; hind tibiæ also bidentate externally, each with the subapical tooth larger and stouter than the other, which is at about the basal third; front tibiæ bidentate at apex. Length, 6-6½ mm.

*Hab.*—Queensland: Kuranda (H. H. D. Griffith).

Allied to *latirostris*, but smaller and less cylindrical, and eyes, antennæ, legs, and prothoracic punctures somewhat different. On the prothorax the dark scales occupy the major portion of the surface, leaving the paler ones in feeble lines and patches. On the elytra they occupy most of the basal fifth, but elsewhere they form but small spots (rather numerous across the middle, however).

#### PSEPHOLASOMA, n. g.

*Head* fairly large. Eyes rather large, round, coarsely faceted. Rostrum rather short and wide, dilated to apex; scrobes rather deep and wide, posteriorly suddenly opened, owing to the lower portion of the rostrum being suddenly truncated. Antennæ short and stout; scape distinctly shorter than funicle; funicle with two basal joints subtriangular, second longer than first, all the others strongly transverse; club ovate. *Prothorax* transverse, apex subtubular. *Scutellum* small. *Elytra* subparallel-sided. *Pectoral canal* wide and rather shallow, walls strongly rounded, but in front rather acutely margined. Mesosternal plate transverse, sides slightly produced in front. Metasternum rather long; episterna distinct. *Abdomen* with two basal segments large. *Legs* moderately long; femora stout; tibiæ with subapical tooth and apical spur.

In my table of the genera allied to *Psepholar* <sup>(46)</sup> could hardly be placed, as the walls of the basal half of the pectoral canal are widely rounded and the apical half acutely margined; in several species of *Psepholar* there is an approach to this structure, but the species described below has the middle tibiæ without a median tooth. But from all the genera there noted it may be distinguished by the sides and under-surface of rostrum. Seen from below the basal half of the rostrum appears to be only about half the width of the apical half, owing to the sudden cutting away of its sides to make room for the antennæ; from the sides the rostrum appears to be notched at its base. With the antennæ at rest, however, these appearances are obscured. The genus is perhaps nearest to *Pseudotheribus*, but in that genus the rostrum is longer and otherwise different. In *Zeneudes*, *Oreda*, and in the male of *Pseudotheribus cylindricus* the scrobes are open at their hinder end,

(46) Proc. Linn. Soc., N.S.W., 1899, p. 52.

but the lower margin of the rostrum runs out obliquely to the open space instead of being abruptly cut off. The antennæ of *Zenoides* and the middle legs of *Oreda* are also very different

Two specimens of a smaller species<sup>(47)</sup> have the sides and under-surface of rostrum as in the present one, but they differ in having the pectoral canal with strongly rounded walls except just behind head (where they are obscured with head in position) and club considerably larger, their middle tibiæ have a distinct outer median tooth, although much smaller than in the species of *Psepholux*, and their femora are distinctly edentate, although the teeth are small. In the present species the femora are practically edentate, although from certain directions extremely feeble teeth may be made out.

#### PSEPHOLASOMA ROSTRALE, n sp

Dark-castaneous, appendages somewhat paler. Densely clothed with scales, mostly somewhat stramineous, but varying to white and sooty.

*Head* with dense partially-concealed punctures. Rostrum distinctly shorter than prothorax, not quite twice as long as wide; with dense punctures, partially concealed on basal half. *Prothorax* about once and one-fourth as wide as long, base bisinuate; with remnants of a feeble median carina; with crowded punctures, causing the derm to appear subgranulate in places. *Elytra* not much wider than prothorax, almost parallel-sided to near apex; with rows of large, angular, partially-concealed punctures; interstices punctate and granulate, the third dilated and somewhat elevated at base. *Under-surface* with rather dense partially-concealed punctures. Length,  $5\frac{1}{4}$ - $5\frac{3}{4}$  mm.

*Hab* — Tasmania. Sheffield (H. H. D. Griffith).

On the elytra the sooty scales form several feeble spots, and on one specimen a distinct, narrow, postmedian fascia. On the under-surface, flanks of prothorax and legs, most of the scales are white.

#### PSEUDOTHEREBUS CYLINDRICUS, n sp

♂. Blackish; antennæ and tarsi of a dingy-red. Moderately clothed with greyish or stramineous and sooty scales.

*Head* with dense and rather small punctures. Rostrum shorter than prothorax, scarcely twice as long as width near

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<sup>(47)</sup> They were given to me as coming from Victoria, but as I think they may really have been from New Zealand, it was not considered advisable to name them.

apex, narrower behind than in front of antennæ; with very dense punctures partially concealed on basal two-thirds; apical half of scrobes visible from above. Scape inserted about two-fifths from apex of rostrum; funicle stout, two basal joints moderately long, the others strongly transverse and feebly dilating to apex; club short, subcontinuous with funicle. *Prothorax* rather lightly transverse, sides rounded, apex scarcely half the width of base and gently incurved to middle, base strongly bisinuate; with dense round punctures, in places feebly confluent; with a thin, continuous, median carina. *Elytra* cylindrical to near apex, slightly wider than prothorax; with rows of large suboblong punctures, in deep striæ; interstices wider than striæ, with small granules and dense punctures, alternate ones feebly elevated, the third rather more noticeably elevated and somewhat dilated near base. *Under-surface* with dense punctures. Walls of pectoral canal cut off at right angles in front. Mesosternal receptacle curvilinearly triangular, with rounded angles. *Legs* rather short; front femora moderately, the others acutely dentate. Length, 7-8 mm.

♀. Differs in having the rostrum longer and thinner, basal third only with concealed punctures, elsewhere shining, and with small but clearly-defined ones; scrobes not visible from above; scape inserted slightly nearer the middle of rostrum, and abdomen distinctly more convex.

*Hab.*—Tasmania: Devonport, Burnie, Hobart (A. M. Lea).

The facets of the eyes are intermediate between those of *Therebus cepuroides* and of *Pseudotherebus sculptipennis*, but as the shape of the mesosternal receptacle is nearer that of the latter, and the femora are dentate, the species has been referred to *Pseudotherebus*, with which in most respects it is in harmony. In general appearance it is fairly close to *sculptipennis*, but is somewhat narrower, and front walls of pectoral canal more conspicuously notched, denoting an approach to *Zeneudes* and *Oreda*. One male, probably from immaturity, has the derm almost entirely of a rather pale-red. On the upper-surface the sooty scales form a feeble patch on each side of the base of the prothorax and several feeble patches on elytra, but they appear to be more easily abraded than the paler ones. On the under-surface and legs the scales are mostly whitish.

Two females from Victoria (C. French) may represent a variety; they differ in being decidedly narrower and with the median carina of prothorax much shorter. Probably, however, the male would show specific distinctions.

## DERBYIELLA LAMINATA, Lea

A specimen from the Upper Endeavour River differs from the type in having the upper-surface almost black, the prothoracic punctures larger, and, except on disc towards base, the contained setæ rising above the general level

COPTOMERUS.<sup>(48)</sup>

Dr. Gestro sent to me five specimens that were identified by Mr. Pascoe as *Coptomerus nigrinasus*, Chev., when dealing with the Austro-Malayan species in Ann Mus. Civ. Gen.<sup>(49)</sup> They are from Somerset (as was the type), and I believe them to be correctly identified. If so the original generic and specific descriptions are very poor, as the abdomen was not even mentioned, and is remarkable, as on each side of the basal segment there is a conspicuous ridge commencing behind the coxa, and the two meeting at the middle of the apex. The mesosternal receptacle is strongly and suddenly elevated above its support, cavernous in front, and bifoveate behind; its emargination also is peculiar, as instead of sweeping round in an even curve, it has an angular notch on one side of the middle, although this would probably not be seen with the rostrum at rest. The femora are all strongly grooved, and the hind pair are straight on their lower edge, but conspicuously angularly dilated at the outer base; the four front tibiae each have at the base a slight extension that projects over the apex of the femur; but this is not conspicuous when the legs are folded together.

On reading over these comments on structure, it will be noticed that they agree exactly with *Amydala abdominalis*, and I have no hesitation in regarding *Coptomerus* as a synonym of *Amydala*

COPTOMERUS NIGRINASUS, Chev. (now *Amydala*).

Differs from *abdominalis* in being much smaller (the type was  $7\frac{1}{2}$  mm.,<sup>(50)</sup> the specimens before me measure from 4 to  $6\frac{1}{2}$  mm.) and differently clothed, and with the antennal club much shorter.

The male differs from the female in having the rostrum with dense clothing halfway to the antennæ, instead of at the base only, and the portion in front opaque and densely and coarsely punctured; in the female the space in front of the scales is shining, and with distinct and clearly-defined but

<sup>(48)</sup> Chevrolat, Ann Soc. Ent. Fr. (6), 1, 1881, lxi.

<sup>(49)</sup> 1885.

<sup>(50)</sup> Possibly the head was included in the length given.

much smaller punctures; the rostrum of the male is also carinated for about half of its length, and his legs are longer, with the front tibiæ conspicuously longer and thinner.

AMYDALA TARSALIS, n. sp.

♂. Blackish; antennæ and tarsi reddish. Rather densely clothed with soft and rather large scales, closely applied to derm, and mostly of a very light-brown or fawn colour, varied with white and black. Front tarsi with long and somewhat golden hairs.

*Head* with concealed punctures. Rostrum straight, almost as long as prothorax, sides lightly incurved to middle; with dense punctures, concealed behind antennæ; with an acute median carina. *Prothorax* conical, about as long as wide; punctures partially concealed: with a median cluster of small granules. *Elytra* closely applied to and outlines subcontinuous with those of prothorax: suture granulate near base; with narrow striæ containing feeble punctures, but both striæ and punctures more or less concealed. *Under-surface* with dense and rather coarse but more or less concealed punctures. Abdomen with a conspicuous triangular space on basal segment, bounded by a shining ridge on each side. *Femora* strongly grooved and angular: the hind ones wide and strongly angularly dilated on the outer side; tibiæ and tarsi long and thin. Length, 6 mm.

*Hab.*—Queensland: Cairns (E. Allen).

An elliptic, strongly-convex species, in size and general appearance close to *nigrinasus*, but differs from male of that species in having the dark prothoracic spot less rounded and nearer the middle, the front legs decidedly longer and thinner, and the front tarsi clothed beneath with longer and more golden hairs; the dilated portion of the hind femora is more angular at its apex, the eyes have somewhat larger facets, and the rostrum is longer, with the median carina more conspicuous. The carina terminates near the apex at a narrow, transverse, shining space or ridge that is fairly distinct from some directions. On the prothorax of the type there are a few black scales scattered about singly, but they mostly form a large irregular spot in middle, and two small medio-basal ones; just behind each side of the large spot is a small spot of white scales. On each elytron there is a fairly large black spot about the base, and one near apex; elsewhere the black and the white scales are scattered irregularly, or in small clusters. On the under-surface most of the scales are white, and there are many white ones on the legs. On the head there is a medio-basal white spot.

## CAMPTORRHINUS INTERSTITIALIS, n. sp.

♂. Blackish; antennæ and tarsi, rostrum, and parts of legs diluted with red. Densely clothed with greyish scales, in places stained with brown; a distinct sooty patch at summit of posterior declivity. Numerous stout scales interspersed. Abdomen with a wide space along middle clothed with fine, golden-brown setæ. Apical half of front tibiæ densely ciliate on lower edge.

*Head* with dense concealed punctures. Rostrum not very long, rather thin, sides somewhat dilated near base; basal third with a feeble median carina, and with coarse partially-concealed punctures; elsewhere shining and with minute punctures. Scape inserted almost in exact middle of rostrum, rather more than half the length of funicle and club combined. *Prothorax* about as long as wide, sides feebly dilated from base to apical third, and then strongly narrowed to apex; with a short and thin median carina; with crowded partially-concealed punctures. *Elytra* about one-third wider than prothorax, parallel-sided to near apex; with semi-double rows of very large punctures, becoming small and regular posteriorly; alternate interstices conspicuously elevated, and each with a row of granules. *Under-surface* with dense more or less concealed punctures. *Femora* stout, strongly dentate: tibiæ compressed, the hind pair wider than the others, and strongly bisinuate on lower surface. Length, 5-9 mm.

♀. Differs in having the rostrum thinner, with less of the base coarsely punctured, abdomen with scales only, and tibiæ ciliate only at tip.

*Hab.*—Queensland Townsville and Kuranda (H. H. D. Griffith, from F. P. Dodd); Cairns (H. W. Cox and E. Allen); Cape York (H. Elgner).

Readily distinguished from *dorsalis* by the elytra; these are without the black dorsal marking, but with a black spot at summit of the posterior declivity, punctures larger and coarser, and the alternate interstices conspicuously and continuously elevated, with granules bearing setæ directed backwards.

## CAMPTORRHINUS INORNATUS, Lea.

♂. Black; antennæ and claws reddish. Densely clothed with greyish, sometimes muddy-grey, scales, somewhat variegated on elytra. With stout and usually dark scales scattered about, singly on the prothorax, mostly on the granules on elytra. Front tibiæ with a very conspicuous fringe of long and somewhat golden hairs continued on to tarsi.

*Head* with crowded concealed punctures. Rostrum moderately long, sides slightly dilated near base; with dense and rather coarse punctures throughout, but becoming smaller

towards apex; with a moderately distinct median carina. Scape inserted slightly nearer apex than base of rostrum. *Prothorax* slightly longer than wide, strongly convex, sides strongly rounded, apex less than half the width of base; with a short median carina: with dense regular punctures, clearly traceable through clothing. *Elytra* no wider than widest part of prothorax, but wider than base, parallel-sided to near apex; with rows of large partially-concealed punctures: interstices each with a row of rather distinct granules, alternate ones feebly elevated. *Under-surface* with dense concealed punctures. *Legs* rather long; femora stout, strongly dentate, four hind tibiae moderately bisinuate on lower-surface, the front ones strongly dentate at basal third, and with a moderately distinct subapical tooth in addition to the terminal hook. Length, 9-10 mm.

♀. Differs in having the rostrum thinner, with distinct punctures only at sides of base, legs shorter, and front tibiae without a tooth at basal third and not fringed.

*Hab.*—Queensland: Brisbane (A. J. Coates and H. W. Brown)

This species, from a single female specimen, was previously described as a variety of *dorsalis*, but having now both sexes it is clearly evident that it is a distinct species, conspicuously different from *dorsalis* by the front tibiae of the male; the elytral markings, when such are present, are also different, and there are numerous granules on the elytra. The elytral granules are supplied with setae, as on the preceding species, but the elytra otherwise, and the legs are very different. On the basal two-thirds of elytra the scales are darker than on the apical third, and the two shades of colour are sharply limited; sometimes the scales, just before the paler portion, being sooty, sometimes of a rusty-brown. On two specimens there is a large, subtriangular, sooty patch on each side, with the hind margins of the triangles meeting at the suture. The legs are sometimes feebly ringed, and there are usually dark spots on the abdomen.

The specific name is rather an unfortunate one, as although some females are entirely without elytral markings, on all the males before me markings are present, as they are also on some females. The clothing of the front tibiae of the male is also of a distinctly ornamental nature.



## NOTE ON HARPA (EOCITHARA) PUNCTATA Verco.

*Harpa punctata*, Verco, Trans. Roy. Soc., S.A., 1896, vol. xx., p. 218. *Type locality*—Off Newland Head in 20 fathoms.

During the past seventeen years three more examples of this shell have been taken—one at Normanville, in the possession of Mr. Kimber; one by Mr. Saunders at American River, Kangaroo Island; and one by Master Francis Arnold at St. Francis Island. The first two are somewhat broken, but the last is a beautiful specimen of a yellowish-salmon tint, with obscure lighter clouded bands as in the type, but not showing its crescentic dark blotches, and numerous punctations.

The original specimens measured 32 mm. in length by 21 mm. in greatest width, and 33 mm. by 22 mm. The St. Francis Island example measures 34 mm. by 24 mm., so that it is the largest example known. All these are mature, as evidenced by the ascent of the suture at the aperture as in the genus *Scaphella*.

It was classed when described as a *Harpa*, but now it is placed in *Eocithara*, a section of that genus created by Fischer in 1883 for the reception of Eocene fossils. Cossmann, in his *Paleoconchologie Comparée*, gives the differential characters of the section, *viz.*, "the columellar border forms a thin, rather wide callosity, which does not spread over the base, nor over the spire whorls, and is bounded outside by a quite distinct margin. This border, too, is detached anteriorly, and forms an umbilical cleft more or less deep instead of spreading itself over the basal pad. Then the siphonal notch is narrower and more deeply cut into this pad, so that when the shell is viewed from the dorsum, the notch forms nearly a semicircle. Finally the riblets are more completely folded upon the suture, and cover it, joining one another; though this last character is less visible in the South Australian *Eocithara*, which have besides a more globular protoconch."

These characters are found in *Harpa punctata*, which has, besides, well marked, the two special features of the South Australian fossil examples of *Eocithara*, *viz.*, the globular protoconch, and the failure of the costules to join one another by folding themselves along the suture.

Professor Tate, in the Transactions of the Royal Society of South Australia, 1888, vol. xi., p. 149, in a paper on "The Gastropods of the Older Tertiary of Australia," describes eight species of *Harpa*, and in Proceedings Royal Society, N.S. Wales, 1893, vol. xxvii., p. 173, a ninth species. By the

courtesy of Mr. W. Howchin, the Curator of the Tate Museum in the University of Adelaide, I have examined the types of these and find they all belong to this section.

Comparison of *H. punctata* with those most nearly allied to it establishes its claim as an independent species. *H. tenuis*, Tate, has 24 ribs instead of 12, and a more pronounced shoulder which is further from the suture. *H. pulligera*, Tate, is much larger, has 29 ribs, a more angulated shoulder, and a much more prominent pullus, the sutures of which are hidden by the first spire whorl. *H. pachycheila*, Tate, is more pyriform, has 15 ribs, which are much stouter, and more prominent, and has marginate sutures. *H. abbreviata*, Tate, has 24 ribs, a less prominent shoulder, with a sloping area between this and the suture, and is much more contracted anteriorly.

Fischer, in his "Manuel de Conchyliologie," 1887, p. 601, gives the Eocene period as that of the *Eocithara*, as indicated, indeed, by its name. Cossmann's localities are Eocene, two species from the Paris Basin, and several species in Australia (all these are Tate's); Oligocene, one probable species

When I described my novelty I noted the interesting discovery of a new species of the genus *Harpa*, which Tryon referred to as "a completed genus, no new forms rewarding the industry of modern investigators and explorers." But the interest is greatly augmented by the recognition that it does not belong to the same section of *Harpa* as any other known recent species, but without doubt to the section *Eocithara*, which flourished in the Eocene period, the earliest of Tertiary times. Further, that it is—as far as I can gather—the only known living representative of this section. Two other points of interest are noteworthy. That here in Australia, where nine out of a possible dozen species of fossil *Eocithara* are found, the one known living species of this section should occur. And also that all the fossils which certainly pertain to this section are attributed to the Eocene period, the oldest of the Tertiaries; that in the Oligocene, the next oldest, there should be but one described species, and that only probable; that none should have been yet taken from the Miocene, Pliocene, or Pleistocene, and yet an *Eocithara*, certainly congeneric and even closely allied specifically, should be living in our South Australian seas.

JOS. C. VERCO.

# NOTE ON *LASÆA SCALARIS*, Phillipi.

When Dr. Torr was gathering chitons at Port Arthur, in Tasmania, in 1912, he collected from the rocks at low tides a number of *Turricula teresiæ*, Tenison-Woods, alive, which he kindly gave to me. Among these were six examples containing living *L. scalaris*. The ventral part of the *Lasæa* was in the aperture of the *Turricula*, and the dorsal portion projected beyond its margin. In two instances the umbos were turned towards the back part of the aperture, and in four towards the front part, so that the position was not uniform. They filled from one-half to two-thirds of the opening of the shell. Their occurrence in this situation may be *accidental*. They might have fallen into the aperture in the bag of the collector, after having been gathered in the same locality; or they might have been drawn into the aperture unintentionally by the animal when disturbed in the water, or when placed in the bag. Their *accidental* presence seems rather unlikely, since six specimens were obtained, and the bivalve was so similarly placed. As the *Turricula* is siphonotomatous, and this usually indicates a carnivorous habit, the *T. teresiæ* might have been consuming the bivalve, whose presence may be *festal*. *Lasæa scalaris*, like other bivalves, is bored by predatory gasteropods. Other individuals taken at low tides, Port Arthur, show the resulting round holes, some in the right, others in the left valve, at varying distances from the umbo. I removed five of the six bivalves from the apertures, and examined them carefully under a stereoscopic microscope, but could detect no hole, however minute, and no spot where the sculpture of the shell had been defaced by any initial boring. The only damage, detected in one shell, was a minute piece removed from the ventral border of one valve, but this might have been an accidental injury. If the gasteropods feed on the bivalve they must have been disturbed directly they settled on their prey, and before they had rasped any circular area in the shell sufficiently to leave any evidence of the process. Is it possible the association is *commensal*? *Lasæa* belongs to the family Erycinidæ, in which are the genera *Montacuta* and *Kellia*, both of which anchor themselves by a byssus, and *Lasæa* is intermediate between them in classification. It is commonly found alive, in abundance, in the crevices between the tubes of the coral-like annelid masses on piles of wharves and piers. If it attaches itself to the inside of the aperture of *T. teresiæ*, it would so block it as to prevent the extrusion of the gasteropod; so it would need to anchor itself to some part of the body of its host, so as to be pushed out and drawn in

with it. The most likely point of attachment would be an operculum; then when the animal was withdrawn into the shell it would draw the bivalve within the aperture, and when the animal extruded itself and crawled about on the ventral surface of its foot, the bivalve could ride in safety fixed to the operculum on the dorsum of the foot. Some of the Mitridæ have opercula, especially the smaller forms, and *T. teresiæ* may; but though I tried to determine this point, I could not find the operculum in two of the examples examined, but they had been largely destroyed by carnivorous larvæ. This note is published to direct attention to the bare possibility of commensal association between a bivalve and a gasteropod, and to suggest investigation by any who can get fresh material as to whether the *L. scalaris* is commonly found in the apertures of gasteropods, and especially of *T. teresiæ*, and whether this shellfish is possessed of an operculum and whether it is carnivorous.

JOS. C. VERCO.

ABSTRACT OF PROCEEDINGS  
OF THE  
**Royal Society of South Australia**  
(Incorporated)  
FOR 1912-13.

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ORDINARY MEETING, NOVEMBER 14, 1912.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair

THE PRESIDENT stated, in reference to resolution passed at the last meeting, that a catalogue of the library was being prepared as quickly as possible.

A letter was received from the Indian Museum, Calcutta, enclosing By-laws *re* loan of specimens from the Museum for the purpose of description or identification.

NOMINATIONS.—A. R. Riddle, science student, Yorketown, Y.P., and T. G. B. Osborn, M.Sc., Professor of Botany, Adelaide University, were nominated as Fellows.

EXHIBITS.—DR. PULLEINE described his recent visit to Tambourine Mountain, one of three mountain plateaus forming the extremity of the Macpherson Range in the East Moreton district of Queensland. The geological conditions were favourable to an extensive fauna and flora. The basal rocks of sandstone or conglomerate of Trias-Jura age, being protected by a cap of basalt, were weathered into precipices resulting in numerous cataracts, while the weathering of the basalt provided a rich surface soil 3 or 4 ft. thick. The height of the plateau was from 1,800 to 2,000 ft., and the rainfall about 80 in. per annum. The flora was of four distinct classes, found respectively in the jungles, the open forests, the creek sides, and the precipices. Dr. Pulleine described a large number of trees, plants, marsupials, birds, and land mollusca which he had observed in several habitats. He exhibited four species of trap-door spiders which he could not find in the Brisbane Museum, *viz.*:—(1) One which built a true trap-door; (2) one which built a well-defined tube with a soft trap-door surrounded by a large web extending over the surface of the ground; (3) a large spider which built no trap-door, but constructed a bifurcated tube with two exits; this spider eats frogs, and he collected one with a frog half consumed; (4) a spider which built no trap-door, but surrounded the opening to its nest with a fence of leaves. He

also exhibited a beautiful green grasshopper and a gigantic earwig. Mr. A. M. LEA exhibited a collection of Queensland insects, including *Phasmidae*, a large grasshopper, a small cricket from an ant's nest, a large cricket from Mount Tambourine, and a large earwig; also a case of beautiful Japanese butterflies. Mr. HOWCHIN, on behalf of Mr. George-Brunskill, exhibited a representation of an aboriginal subincised phallus, worked out of an igneous basic rock, which was obtained from Kimberley, Western Australia. Dr. ROGERS exhibited a herbarium specimen of *Liperaanthus nigricans*, from Hahndorf, and referred to a method of preserving the colour of dried specimens by placing them for fifteen minutes in a solution of three parts of sulphurous acid and one part of methylated alcohol. This solution would restore the colour if already lost. Mr. A. M. Lea stated that glycerine would restore the colour of beetles once, but not a second time. Dr. VERCO exhibited three cowries (*Cypræa theristes*, Gaskoin) taken from a depth of 100 fathoms in the Great Australian Bight. The brown markings, shown on other specimens obtained from shallower depths, exhibited for comparison, were hardly noticeable. Adult shells from shallow waters were usually very dark, and even young shells from shallow water were more marked than adults from deep water. The same fact was noticeable in some, but not in all volutes. He also exhibited three Japanese shells, *Pecten swifti*, *P. latiazis*, and *P. japonica*; also *Columbarium pagoda*, so called from its resemblance to the multiple roof of a pagoda. Dr. Pulleine stated that he had found pagoda-like shells in deep water off Sydney Heads.

PAPER.—A paper "On Three Species of Isopod Crustacea from the Nests of Ants in South Australia," by W. H. Baker, F.L.S., was laid on the table.

#### ORDINARY MEETING, APRIL 10, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

ELECTIONS.—A. R. Riddle, science student, Yorketown, Y.P., and T. G. B. Osborn, Professor of Botany, University of Adelaide, were elected Fellows.

NOMINATION.—H. J. Carter, B.A., Darling Point, Sydney, was nominated as a Corresponding Member.

PREMIUM FOR NEW COMET.—A letter was received through His Excellency the Governor from the Mexican Legation, London, stating that the Astronomical Society of Mexico would award a diploma and medal to the discoverer of any new comet.

ANTARCTIC EXPLORERS.—THE PRESIDENT expressed the regret of the society at the death of Captain Scott and his companions, and stated that he had represented the society at the memorial service held in the Cathedral. He also expressed the sympathy of the society with Dr. Mawson on the loss of two of his companions, their admiration of his successful solitary journey of three weeks, and their hope that his further compulsory year to be spent in the Antarctic would be fruitful in scientific results.

EXHIBITS.—THE PRESIDENT exhibited the skin of a crested penguin which had been sent to him from St. Francis Island, off the west coast of South Australia, by Master Francis Arnold. This species is shown in the South Australian Museum under the name *Catarrhactes pachyrhyncus*. There are two stuffed specimens, beautiful birds, presented alive by Sir Samuel Way. In Campbell's "Nests and Eggs of Australian Birds" it is called *Catarrhactes chrysocrome*. It is very seldom seen on the Australian coast. Its natural habitat is in the islands south of, or just beyond the line of icebergs, namely, Macquarie Island, Suarez Island, Patagonia, Falkland Island, South Georgia Island, Tristan de Cunha, and Gough Island, the Cape of Good Hope, Prince Edward Island, the Crozet Islands, Kerguelen Island, and St. Paul's; so that St. Paul's, far to the west, and Macquarie Island, far to the south-east, are the nearest rookeries known; and of these Macquarie Island is the less distant. An occasional wanderer has been taken at Hamelin Harbour, near Cape Leeuwin, and at King Island, in Bass Strait, and on the coast of Tasmania. They are popularly called rock hoppers, because, instead of walking like the common little penguin, they hop, as though their feet were tied together, from rock to rock, just as a sparrow hops. The hen bird lays two eggs, and the first egg is always much smaller than the other. It is a very pretty bird, with its long golden-yellow feathers arranged over each eye, and projecting behind the head in the form of a crest. What induced this penguin to visit St. Francis Island can only be conjectured; probably "circumstances over which it had no control"; but fortunately for us they led to the undoing of the solitary wanderer, and to the preservation of his skin for the Adelaide Museum. Mr. F. R. ZIEFZ exhibited a nest of the tree swallow (*Petrochelidon nigricans*), constructed in a glass sugar basin, which stood on a mantelpiece in a house in Hamilton, near Kapunda. A brood had been reared in the nest. Also a hybrid duck shot by Mr. F. G. Ayres, of Narrung, South Australia, a cross between *Aythya australis* and *Nettion gibberifrons*. Captain S. A. White exhibited four birds

from Flinders Island new to science, viz., *Falco melanotis*, *Sericornis flindersi*, *Malurus samueli*, and *M. melanotus whitei*. Mr. A. M. LEA exhibited a miscellaneous collection of insects, comprising (1) Blind beetles; (2) beetles found in ant's nests; (3) flies, parasites, bugs, ticks, and mites from opossums' nests; (4) two of the largest flies known in Australia, which lived on beetles; (5) a blow-fly with pseudo-scorpion attached; (6) flies which congregate in clusters as large as a cricket-ball; also samples of potato attacked by Irish blight. Dr. PULLEINE exhibited foliage and inflorescence of *Pisonia brunoniana*, a tree growing to a height of 60 or 70 ft., which forms the principal flora of coral-sand islands. The inflorescence, being very sticky, is probably the means by which the tree is transported from island to island by the terns which frequent them. Dr. E. A. JOHNSON exhibited ecto-parasites from a shark; also *Atriplex cinerum* (native spinach), an edible plant having roots over 20 ft. long; also granite stones from Birdseye Island, polished on the upper-side only, a fact which he suggested to be due to the action of the feet of birds upon the excreta dropped thereon; also a flint from Cape Banks, a so-called biscuit stone from the South-East, a black beetle with a spine on the centre of its back, known as the biscuit beetle; and, mounted as a microscopical slide, a section of a lymphoid lump asserted to be from the intestines of Napoleon Bonaparte.

PAPERS.—“Notes and Tabulation of the Australian Amarygmīnæ (Family Tenebrionidæ), with descriptions of twenty-five new species,” by H. J. CARTER, B.A., F.E.S., communicated by A. M. Lea, F.E.S.: “The Flowering and Fruiting of *Pectinella antarctica* (*Cymodocea antarctica*),” by J. M. BLACK; “A New Genus of Chalcidoid Hymenoptera of the Family Mymaridæ, from Tasmania,” by A. A. GIRAULT, communicated by A. M. Lea, F.E.S.

#### ORDINARY MEETING, MAY 8, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

LISTER MEMORIAL FUND.—Letter from the hon. secretary of the fund, soliciting subscriptions for the purpose of (1) placing a medallion of Lord Lister in Westminster Abbey; (2) erecting a more conspicuous monument in some public place in London, and (3) forming an endowment fund to give grants in aid of researches bearing on surgery, or rewards for important contributions to surgical science.

ELECTION.—H. J. Carter, B.A., Sydney, as a Corresponding Member.



NOMINATIONS.—Francis Durward, chemist, Currie Street, and James Hendry, chemist, Currie Street, as Fellows

MEMOIRS.—The Editor announced the issue in December, 1912, of Part 4, completing Vol. II. of the Society's Memoirs

LATE J. W. MELLOR.—Resolved "That this society notes with regret the death of Mr. J. W. Mellor, expresses its sympathy with his family in their loss, and hereby places on record its appreciation of the long and valuable service rendered to science by that gentleman in connection with the Field Naturalists' Section of the Society."

EXHIBITS.—Mr. J. G. O. TEPPER, F.L.S., exhibited photograph of *Yucca alvifolia*. This plant was fertilized by a moth about half an inch long, having a long ovipositor furnished with a saw, and maxillæ incurved and barbed so as to act as claspers. The insect collected pollen from the male flower with its claspers, deposited its egg deep in the stigma of the female flower, and filled up the hole with the pollen. He grew these plants for seventeen years before he obtained fruit. The question was how fertilization was effected in this case, no moth specialized as above described being known in South Australia. Also seeds of *Stapelia buffonia*, which, nearly a year after the disappearance of the male flower, produced two feelers about 6 in. long with a cloud of small seeds with white petals, the seeds being scattered by the wind. Mr. A. M. LEA, F.E.S., exhibited an assortment of insects, including (1) several reared from the abdomen of a large moth; (2) large fish-killing bug from North Australia; (3) two beetles (*Leptops colossus*) which were seriously damaging the apple orchards of Mount Lofty, by grooves cut in the roots, by the larvæ; (4) flies and fleas reared from the nest of a robin; (5) a bot-fly from the throat of a hill kangaroo; (6) ground nests, said to be formed by a cricket, one of which, found with them, was also shown. Mr. Lea, on account of a fibrous membrane at the base of the nest, thought that the builder was a spider, but Dr. Pulleine and Dr. Verco pronounced the membrane to be hardened mucilage, and not spiders' web. Mr. HOWCHIN, F.G.S., exhibited fragments of a subfossil emu's egg, obtained by Mr. A. E. Warman from a railway cutting at Wolseley, and forwarded by him to the South Australian Museum. The fragments were coated with travertine limestone, but a microscopical section showed them to possess the characteristic structure of the emu egg-shell, as shown by a section of a recent shell. Mr. E. R. STANLEY exhibited a series of rocks from the oil-bearing strata of New Guinea. Some of the fossils therein were identical with those found in the oil beds of Sumatra. Mud volcanoes existed in the district, and furnished gas and globules of

petroleum. Dr. PULLEINE exhibited a phallocrypt from Southern Dutch New Guinea, near the British border. It was made of bamboo, carved and incised into the resemblance of a man.

ILLUSTRATIONS TO TRANSACTIONS.—The President spoke of the congratulations that he had received on behalf of the society upon the excellence of the three-colour illustrations appearing in the last issue of the Transactions. They were the work of the Donald Taylor Collotype Co., of South Australia. A water-colour painting of the shell was made by the artist and photographed in colours. Three negatives were prepared. The light from the painting entering the camera lens was filtered through a blue screen, which gave a yellow negative; through a green screen, which gave a red negative; and through a red screen, which gave a blue negative. Each of these negatives was printed on ordinary bromide paper, and gave a print with dark shades where the colour was most intense, and light shades where it was less intense. Each of these positive prints was then used to furnish an ordinary half-tone negative, and these negatives were used to print upon three metal plates, which, being treated with chemical corrosives, provided three blocks for printing the three several colours. Yellow, red, and blue inks, corresponding exactly with the complementary screens which had been employed in the original three-colour photography, were used in the final printing, the first impression being the yellow, the second the red, and the third the blue, the three superposed giving the tints of the original watercolour. Of course great care and skill were needed to maintain an exact balance between the three colours, and between these and the tints of the screens, and an exact superposition of the three separate prints, technically known as the maintenance of the register.

Mr. W. H. SELWAY referred to the danger there was of damage being done to the glaciated rocks at Hallett's Cove from holiday-makers when the Willunga Railway was opened to traffic, and suggested that the Council should consider the question of their protection.

PAPERS.—"An Evolution of the Sphere," by G. A. GOYDER, F.C.S., read by Professor R. W. Chapman, M.A., B.C.E.; "Description of New Genera and Species of Australian Chalcidoid Hymenoptera in the South Australian Museum," by A. A. GIRAULT, communicated through A. M. Lea, F.E.S.

ORDINARY MEETING, JUNE 12, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

ELECTIONS.—James Durward, chemist, Currie Street, and James Hendry, chemist, Currie Street, as Fellows.

GRANTS IN AID OF RESEARCH.—THE PRESIDENT submitted draft of a circular offering grants in aid of Scientific Research, which had been prepared by the Council, and moved that the same be approved. The motion was seconded by Mr. S. DIXON, and after discussion carried.

LATE G. BRUNSKILL.—THE PRESIDENT referred to the recent death of Mr. George Brunskill, for nine years a useful Fellow of the Society, and it was resolved "That a letter of sympathy be sent to his widow."

EXHIBITS.—PROFESSOR KERR GRANT exhibited "The Rainbow Cup," an instrument designed by Professor Voys, of London. A soap film, stretched on a metal hoop, was rapidly rotated, the centrifugal force caused the thickness of the film to decrease from the circumference to the centre, thus causing the light reflected by the film to vary in colour, and show a series of coloured rings, finally resulting in a central black spot when the thickness was reduced to one twelve-millionth of a millimetre. Mr. W. H. SELWAY exhibited a glaciated stone from the neighbourhood of Hallett's Cove. Mr. A. M. LEA exhibited a collection of insects forwarded by Mr. Horace Brown from the Cue district of Western Australia. Captain S. A. WHITE exhibited the following birds:—*Climacteris rufa orientalis*, Mathews, or rufous tree-creeper, from the western end of Gawler Ranges, the only locality in South Australia in which it had been found, it being a Western Australian bird. Mr. A. M. Lea had found the contents of the stomach to be 150 heads of small caterpillars, 1 small cockroach, 36 small pissants, 4 larger pissants, 1 sugar ant, 23 green-head ants, and 1 part of the head of an ant. *Climacteris superciliosa*, North, or white-browed tree-creeper, from Lake Gairdner, discovered by the Horn Expedition, in Central Australia, in 1894. *Climacteris leucophaea*, Latham, or white-throated tree-creeper, from Myponga, a fairly common bird in the Mount Lofty Ranges, shown for comparison with *superciliosa*. *Pachycephala rufigularis*, Gould, or red-throated thickhead, from Ned's Well, east of River Murray, described by John Gould in 1840, but not since seen until rediscovered by Captain and Mrs. White in 1912. Its note was very distinct from that of all other members of the genus. *Pachycephala gilberti*, Gould, or Gilbert's thickhead, from Gawler Ranges, discovered in Western Australia by Gilbert, prior to 1844, and extending into the north-west parts of South Australia. Mr. F. R. ZIETZ exhibited an introduced *Hibiscus*, now running wild in South Australia.

PAPERS —“Additions to the Flora of South Australia,” by J. M. BLACK; “Mechanism of Pollination in some Australian Orchids,” by R. S. ROGERS, M.A., M.D.

#### ORDINARY MEETING, JULY 10, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) and afterwards WALTER HOWCHIN, F.G.S., in the chair.

AID TO RESEARCH.—The Hon. Secretary reported that the circular approved at the last meeting had been printed and distributed to all universities and to various societies in Australia.

VISIT OF BRITISH ASSOCIATION —THE PRESIDENT stated that the names of persons willing to offer hospitality to members of the British Association for the Advancement of Science, who would be visiting Adelaide in 1914, should be given to either Professor Kerr Grant or the Hon. Secretary.

EXHIBITS —THE PRESIDENT exhibited models showing how, in the families Pyramidellidæ and Turbonillidæ, a sinistral protoconch is found on a dextral shell, lying sometimes horizontally, sometimes obliquely, and sometimes imbedded in the upper part of the adult shell. Mr. E. ASHBY exhibited the following grass parrots:—*Psephotus hæmatorrhous*, from Queensland; *P. xanthorrhous*, from South Australia; *P. hæmatonotus*, which was common near Adelaide, in 1888; *P. multicolor*; *P. pulcherrimus*, from Queensland, male and female; and *Neophema pulchella*, which was supposed to be extinct. Captain S. A. WHITE exhibited the following ground birds inhabiting saltbush country:—*Calamanthus ethelaë*, Mathews, male and female, from Eyre Peninsula, and male from near Meningie, Lake Albert, a new sub-species; *Calamanthus campestris*, Gould, three specimens from Port Augusta district, whence also Gould obtained his type. Mr. A. M. LEA, F.E.S., exhibited a branch of *Eucalyptus* affected by a bag moth, the bags being supposed to be a protection against birds; also a gall from a species of *Acacia*, supposed to be caused by a rust, with which Professor McAlpine had found them thickly coated. Mr. F. R. ZIERTZ exhibited two species of snakes and two of lizards collected by Captain S. A. White on an ornithological expedition of the Royal Australasian Ornithologists' Union on Flinders Island, Bass Straits. So far as known these species have not been previously recorded from that island. They were as follows:—*Denisonia superba*, large-scaled snake, or copper-head, also known as the diamond snake of Tasmania; formerly recorded from New South Wales, South Australia, and Tasmania; length, 48 in.; *Notechis scutatus*, tiger snake of

Victoria and South Australia, also known as the brown-banded snake of New South Wales; the specimen was of the black variety, which had also been found at the southern extremity of Yorke Peninsula, South Australia, and on some of the islands in Spencer Gulf; formerly recorded from Australia and Tasmania; length, 50 in.; *Tiliqua nigrolutea*, the black and yellow blue-tongued lizard, formerly recorded from South Australia and Tasmania; *Amphibolurus angulifer*, formerly recorded from south-eastern Australia and Tasmania. With respect to these exhibits Mr. Howchin, F.G.S., said that they were interesting as bearing upon the question of the date of subsidence of the land formerly connecting Tasmania with Australia. Mr. ZIETZ also exhibited a small spider standing on a twig with its legs gathered together, so that he perfectly simulated a leaf stalk from which the leaf had been broken.

PAPER.—“Additions to South Australian Orchideæ,” by R. S. ROGERS, M.A., M.D.

#### ORDINARY MEETING, AUGUST 14, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

EXHIBITS.—Dr. A. M. MORGAN exhibited a lightning tube (fulgurite) showing the effects of lightning striking sand at the Reedbeds, near Adelaide. Mr. J. G. O. TEPPER exhibited some stereoscopic views of forests and parks at Greitz, Central Germany; also two letters bearing the signatures of Lord Kelvin and Sir William Crookes. Mr. A. M. LEA exhibited four specimens of the Giant Atlas Moth of Queensland, with eggs, larvæ, and pupæ of the same; also some curious gall-like growths on apple-trees from Mount Lofty, caused by a bacterium, and known as crown gall. The PRESIDENT exhibited a series of the Polyzoon, *Cellepora verticalis*,<sup>(1)</sup> Maplestone, Proceedings Royal Society of Victoria, vol. xxiii. (N.S.), part 1, p. 39, plates vii., viii., ix. They were co-types of specimens which were supplied to Mr. Maplestone by Dr. Verco. The exhibit was a series of seven examples from early to senile stages of growth, showing how the secondary flanges are added to the primary, and how they increase in thickness by the superposition of new zoecia laid back to back; so that when the polyzoa dry they are liable to split along this plane. He also showed a number of species of the genus *Mitra* to demonstrate the beauty of the ornament and sculpture in this group of shells.

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<sup>(1)</sup> These two exhibits were afterwards presented to the South Australian Museum.

PAPER. — "Australian Hymenoptera, Proctotrypoidea, Family Scellionidæ," by ALAN P. DODD, communicated by A. M. Lea, F.E.S.

#### ORDINARY MEETING, SEPTEMBER 11, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

EXHIBITS.—MR A. M. LEA exhibited a large collection of weevils, illustrating his paper on Cryptorhynchides; also a snake-like lizard with rudimentary legs. THE PRESIDENT exhibited six individuals of *Turricula teresæ*, Tenison-Woods, each of which had a specimen of *Luscea scalaris* in its mouth, a note about which appears at page 448.

PAPERS.—"Notes on Cryptorhynchides (Coleoptera: Curculionidæ) in the South Australian Museum, with Descriptions of New Species," by A. M. LEA, F.E.S.; "Descriptions of Australian Curculionidæ, with Notes on previously described Species," by A. M. LEA, F.E.S.; "Notes on the Occurrence of Carnotite and Radio-active Ilmenite, near Cutana, South Australia," by A. C. BROUGHTON.

#### ANNUAL MEETING, OCTOBER 9, 1913.

THE PRESIDENT (J. C. Verco, M.D., F.R.C.S.) in the chair.

The Annual Report and Balance-sheet were read and adopted.

ELECTION OF OFFICERS.—*President*, J. C. Verco, M.D., F.R.C.S.; *Vice-Presidents*, Professor E. H. Rennie, M.A., D.Sc., F.C.S., and R. H. Pulleine, M.B.; *Hon. Treasurer*, W. B. Poole; *Members of Council*, R. S. Rogers, M.A., M.D., and W. Howchin, F.G.S.; *Hon. Auditors*, W. L. Ware, J.P., and H. Whitbread.

It was resolved: "That a hearty vote of thanks be accorded to Mr. Howchin for his excellent work as Hon. Editor of the Society's publications, and also to Mr. Poole and Mr. Rutt for their respective work as Hon. Treasurer and Hon. Secretary."

EXHIBITS.—MR. A. M. LEA exhibited a case of insects, including a large collection from the north-west portion of New Guinea, and a group of mosquitoes; also a portion of the stomach of a horse, showing the maggots of the bot-flies which caused its death; also the insects and gall of *Brachyscelis*, the gall of which is eaten by the aborigines in the north-west portion of the State. MR. HOWCHIN exhibited some consolidated gravel from Messrs. Clutterbuck Bros.' gravel and sand pits, Findon. The beds are about 15 ft. in thickness,

and represent the old lines of river drainage over the Adelaide Plains which have become extinct. He stated that the gravel beds of the plains were of a more recent age than those which are found in the high-level grounds of the foothills at Blackwood, Belair, and elsewhere. Mr. Ridgway, of Clutterbuck Bros., kindly showed Mr. Howchin over the pits, and stated that the head and other bones of a *Diprotodon* had been found in the gravel at Findon within a few chains of the workings visited.

PAPER.—“Notes of South Australian Marine Mollusca, with Descriptions of New Species, Part xvi.,” by J. C. VERCO, M.D., F.R.C.S

## ANNUAL REPORT, 1912-13.

The Council has pleasure in reporting that the work of the Society has been well sustained during the past year. The annual volume of Transactions will contain further papers on Coleoptera by Mr. A. M. Lea, on Orchids by Dr R. S. Rogers, on Australian Plants by Mr. J. M. Black, and other valuable contributions to natural science. Volume II. of the Memoirs has been completed by the issue of Part 4, consisting of “Geological Investigations in the Broken Hill Area,” by Dr. Mawson, and Part 4 of Volume I., which will complete the series dealing with the fossil fauna of Lake Callabonna, is almost ready for publication. The exhibits at the evening meetings have also been of a varied and interesting character.

When the Endowment Fund was inaugurated, one of the principal objects in view was to place the Society in such a position as to enable it to assist those who might be desirous of engaging in scientific research, but were in need of some financial help towards defraying the necessary out-of-pocket expenses. A circular, a copy of which accompanies this Report, was therefore issued in June, setting forth the conditions under which applications for such grants would be considered by the Council. This circular was sent to every Institute in South Australia, to every Association in the State likely to be interested in the proposal, and to the learned Societies and Universities throughout the Commonwealth. By the courtesy of the Acting-Director of Education it was published in the South Australian *Educational Gazette*, which reaches every teacher and officer connected with the State schools, and copies were furnished to the State School Inspectors for distribution to possible applicants as opportunity offered. So far, however,

no application for a grant has been received. It is to be hoped that the efforts of the Society to direct the latent energies of those interested in science to some definite object will not prove fruitless.

A further advance has been made in the campaign started by the Fauna and Flora Protection Committee of our Field Naturalists' Section for the reservation of the western portion of Kangaroo Island. It is believed that a Bill has been drafted by the Government embodying most of the suggestions made by your Council, and it is hoped that the same may be passed this session, as it is important that there should be no delay in taking the necessary steps for the preservation of our native fauna and flora, which are fast disappearing before the advance of settlement.

Additional assistance has been obtained for the purpose of completing the catalogue of the library, and a considerable number of sets of volumes have been checked through and prepared for binding. The list of exchanges with other learned Societies has been revised, and communication opened with several Societies whose publications have not hitherto been received by us. This action has already borne fruit, and it is expected that before long it will result in a considerable addition to the annual receipts of volumes which will be of use to scientific workers in this State.

Dr. Mawson, one of our Fellows, whose expedition to the Antarctic was referred to in last year's Report, having been unable to meet the vessel which brought back most of his party, has, with a few of his companions, spent another winter in the polar regions. His return is expected shortly, and it is gratifying to know that his enforced detention, although disappointing to his family and friends, has been productive of a large accumulation of facts of great scientific value.

Three of our Fellows, Ex-Senator Joseph Vardon, Mr. George Brunskill, and Mr. William Taylor, have been called away by death. One Corresponding Member and 4 Fellows have been elected during the year, and the membership now comprises 10 Honorary Fellows, 7 Corresponding Members, 75 Fellows, and 1 Associate.

JOS. C. VERCO, *President.*

WALTER RUTT, *Hon. Secretary.*

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[*Copy of circular referred to in Report.*]

#### GRANTS IN AID OF SCIENTIFIC RESEARCH.

The great value to the community of scientific research, as leading, directly or indirectly, to the better utilization of the many natural and artificial products available for use by man,



has long been a well-established fact, and nowhere is this more certain than in a comparatively new country like South Australia. There must be many persons, both in the centres of population and in the outlying districts of this State, who have both the intelligence and the will to devote some of their leisure time to the investigation of phenomena, the knowledge of which might be not only of considerable scientific interest, but also of great economic value.

It is believed that a large amount of such useful knowledge has been obtained by individual workers, but has been lost to the community through want of publication, and that such knowledge is often limited and not brought to a practical issue, through inability of the worker to incur the expenditure required for making the necessary experiments, and so obtaining clear and definite results.

With a view to assist and encourage such Australians as are anxious to devote their leisure and thought systematically to any definite line of research, the Royal Society of South Australia is prepared to make small grants of money to assist in defraying the expenditure involved in such investigations.

The conditions upon which such grants will be considered are as under:—

1. The applicant must write to the Hon. Sec. of the Royal Society of S.A., Adelaide, stating definitely the line of investigation which he wishes to pursue.

2. He must, either by enclosed recommendations or otherwise, satisfy the Council that he is competent to carry out such investigations, and that any grant made will be usefully expended and strictly for the purpose set forth above.

3. He must from time to time, and whenever asked to do so, report to the Council the progress which he has made in his investigations, and the details of the way in which he has expended the grant.

4. He must embody the results, whether they be large or small, positive or negative, in writing, and forward the same to the Council, who will decide whether they are of such a nature as to be inserted in the publications of the Society, and shall not publish them through any other channel, unless informed that they will not be so inserted.

5. If the Council decides to include them in the Society's publications, either in the form of a paper contributed by the worker, or in such other form, duly crediting him with the work, as the Council may deem fit; he will receive 25 copies of so much of the Society's publications as refers to his work.

6. It is distinctly understood that the Royal Society has the right to distribute the information gained by the worker,

with due acknowledgment, in any way it deems to be for the good of the community

7. If any portion of a grant is expended upon apparatus or material of permanent value, the same shall become the property of the Society.

It is hoped that no one who takes an interest in the advancement of scientific knowledge, and who thinks that with the assistance of such a grant he may be enabled to do something to further the objects aimed at, will hesitate to apply.

No publicity will be given to any application with which the Council is unable for any reason whatever to comply.

JOS. C. VERCO, *President.*

WALTER RUTT, *Hon. Secretary.*

North Terrace, Adelaide,

June, 1913

ROYAL SOCIETY OF SOUTH AUSTRALIA (INCORPORATED).

### REVENUE AND EXPENDITURE FOR 1912-1913.

	£	s.	d.	£	s.	d.	£	s.	d.
To Balance October 1, 1912	...	...	...	537	4	0			
By Subscriptions—									
Royal Society	69	11	0						
Field Naturalists' Section	17	2	6						
Malacological Section	8	10	0						
Microscopical Section	3	15	9						
Grants from Government—				93	19	3			
On Subscriptions	78	0	9						
For Printing Reports on Scientific Investigations in South Australia	...	150	0	0	228	0	9		
Astronomical Society—									
For use of Room	...	...	...	1	10	0			
Sale of Transactions	...	...	...	9	3	9			
Interest on S.A. Government Stock	...	...	...	75	0	0			
Savings Bank Interest	...	...	...	8	17	7			
By Transactions—									
Printing	...	...	...						
Illustrating	...	...	...						
Publishing	...	...	...						
Monographs—									
Printing	...	...	...						
Illustrating	...	...	...						
Publishing	...	...	...						
Grants									
To Field Naturalists' Section	...	...	...						
" Microscopical Section	...	...	...						
Library—									
Binding	...	...	...						
Cataloguing	...	...	...						
Attendant	...	...	...						
Iron Safe	...	...	...						
Cleaning and Lighting	...	...	...						
Printing, Stationery, and Postage	...	...	...						
Advertising	...	...	...						
Insurance	...	...	...						
Bank Account Charge	...	...	...						
Transfer to Endowment Fund									
Balance September 30, 1913									
				£953	15	4			

**Examined and found correct—**

W. L. WARE,  
HOWARD WHITBREAD, } *Hon. Auditors.*

September 30, 1913.

W. B. POOLE, *Hon. Treasurer.*

**ENDOWMENT FUND.**

	£	s.	d.		£	s.
To Amount of Fund October 1, 1912	...	2,276	10	10	By £2,450 S.A. 3½ per cent. Inscribed Stock	... 2,429 10
" Donation ... ..	...	120	0	0	" Interest accrued at date of purchase of £450 of this Stock	... 2 14
" Interest transferred from Revenue and Ex- penditure Account	...	75	0	0	" Balance in Savings Bank	... 47 19
" Savings Bank Interest ... ..	...	8	13	4		
		£2,480	4	2		£2,480 4

**Examined and found correct—**

W. L. WARE,  
HOWARD WHITBREAD,

**Hon. Auditors.**

September 30, 1913.

**W. B. POOLE, Hon. Treasurer.**

## DONATIONS TO THE LIBRARY.

FOR THE YEAR 1912-13.

TRANSACTIONS, JOURNALS, REPORTS, ETC.,  
presented by the respective editors, societies, and  
governments

## AUSTRALIA.

- AUSTRALIA. *Bureau of Census and Statistics*. Official year book, no. 6, 1901-12. Melb. 1913.  
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 ——— Miscellaneous ser. 8. Syd.  
 ——— Records, vol. 9, no. 3; vol. 10, no. 1-5. Syd. 1913.  
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- *Department of Mines*. Annual report of the Secretary for Mines, 1912. Melb. 1913.
- Bulletin of the Geological Survey, no. 27-28, with maps. Melb. 1912-13.
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- VICTORIAN GEOGRAPHICAL JOURNAL, vol. 29. Melb. 1912.
- VICTORIAN NATURALIST, vol. 29, no. 7-12; vol. 30, pt 1-4. Melb. 1912-13.
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- MAITLAND, A. GIBB. Anniversary address on relics of the permo-carboniferous ice age in Western Australia. Perth. n.d.
- WESTERN AUSTRALIA. *Geological Survey*. Bulletin, no. 42, 43, 45-7, 50. Perth. 1912.
- *Museum and Art Gallery*. Records, vol. 1, pt. 1-2. Perth. 1910-12.
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- CONCHOLOGICAL SOCIETY. Journal of conchology, vol. 14, pt. 1-4. Lond. 1913.
- ENTOMOLOGICAL SOCIETY OF LONDON. Transactions, 1912. Lond. 1911-12.
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## LIST OF FELLOWS, MEMBERS,

Etc.,

OCTOBER, 1913.

Those marked with an asterisk have contributed papers published in the Society's Transactions.

Any change in address should be notified to the Secretary

NOTE.—The publications of the Society will not be sent to those whose subscriptions are in arrears.

Date of  
Election

## HONORARY FELLOWS.

1910. \*BRAGG, W. H., M.A., F.R.S., Professor of Physics,  
University of Leeds, England (Fellow 1886).  
1893. \*COSSMAN, M., Rue de Maubeuge, 95, Paris.  
1897. \*DAVID, T. W. EDGEWORTH, C.M.G., B.A., D.Sc., F.R.S.,  
F.G.S., Professor of Geology, University of Sydney.  
1890. \*ETHERIDGE, ROBERT, Director of the Australian Museum  
of New South Wales, Sydney.  
1905. GILL, THOMAS, I.S.O., Under-Treasurer, Adelaide.  
1905. \*HEDLEY, CHAS. H., Naturalist, Australian Museum,  
Sydney.  
1892. \*MAIDEN, J. H., F.L.S., F.C.S., Director Botanic Gardens,  
Sydney, New South Wales.  
1898. \*MEYRIK, E. T., B.A., F.R.S., F.Z.S., Tohrnhanger, Marl-  
borough, Wilts, England.  
1894. \*WILSON, J. T., M.D., Professor of Anatomy, University  
of Sydney, New South Wales.  
1912. \*TEPPER, J. G. O., F.L.S., Elizabeth Street, Norwood  
(Corresponding Member 1878, Fellow 1886).

## CORRESPONDING MEMBERS.

1881. BAILEY, F. M., F.L.S., Colonial Botanist, Brisbane,  
Queensland.  
1913. \*CARTER, H. J., B.A., Darling Point, Sydney.  
1880. \*FOELSCH, PAUL, Palmerston, Northern Territory.  
1909. \*JOHNCOCK, C. F., Clare.  
1893. STRETTON, W. G., Palmerston, Northern Territory.  
1905. THOMSON, G. M., F.L.S., F.C.S., Dunedin, New Zealand.  
1908. \*WOOLNOUGH, WALTER GEORGE, D.Sc., F.G.S., Professor in  
Geology, University of Perth (Fellow 1902).

## FELLOWS.

1895. \*ASHBY, EDWIN, 111, King William Street, Adelaide.  
1902. \*BAKER, W. H., F.L.S., Glen Osmond Road, Parkside.  
1908. \*BENSON, W. NOEL, B.Sc., c/o W. Benson, 63, Pitt Street,  
Sydney.  
1907. \*BLACK, J. McCONNELL, Alfred Street, Norwood.  
1909. \*BRADLEY, EDGAR J., C.E., Hydraulic Engineer's Depart-  
ment, Adelaide.  
1912. BROUGHTON, A. C., Young Street, Parkside.  
1911. BROWN, EDGAR J., M.B., D.Ph., 3, North Terrace.  
1883. BROWN, H. Y. L., F.G.S., Sea Wall, New Glenelg.

1893. BRUMMITT, ROBERT, M.R.C.S., Medindie  
 1906. BUNDEY, Miss ELLEN MILNE, 148, Molesworth Street, North Adelaide.  
 1907. \*CHAPMAN, R. W., M.A., B.C.E., Professor of Mathematics and Mechanics, University of Adelaide.  
 1904. CHRISTIE, W., 49, Rundle Street, Adelaide.  
 1910. \*CLARK, E. V., B.Sc., Lecturer in Electrical Engineering, University of Adelaide.  
 1879. \*CLELAND, W. L., M.B., Ch.M., J.P., Colonial Surgeon. Resident Medical Officer, Parkside Lunatic Asylum.  
 1895. CLELAND, JOHN B., M.D., Government Bureau of Microbiology, Sydney, New South Wales.  
 1907. \*COOKE, T. W., D.Sc., Lecturer, University of Adelaide.  
 1912. CORBIN, H., B.Sc., Forest Department, Adelaide.  
 1907. DARLING, JOHN, Kent Terrace, Norwood.  
 1912. DESMOND, J., Currie Street, Adelaide.  
 1887. \*DIXON, SAMUEL, Bath Street, New Glenelg.  
 1913. DURWARD, JAMES, Currie Street, Adelaide.  
 1911. DUTTON, H. H., Anlaby.  
 1902. EDQUIST, A. G., Tate Terrace, Croydon.  
 1911. GILLESPIE, H. R., 51, Angas Street.  
 1904. GORDON, DAVID, Gawler Place, Adelaide.  
 1880. \*GOYDER, GEORGE, A.M., F.C.S., Analyst and Assayer, Adelaide.  
 1910. \*GRANT, KERR, M.Sc., Professor of Physics, University of Adelaide.  
 1904. GRIFFITH, H., Henley Beach.  
 1896. HAWKER, E. W., F.C.S., East Bungaree, Clare.  
 1913. HENDRY, JAMES, Currie Street, Adelaide.  
 1891. \*HOLTZE, MAURICE, F.L.S., F.R.G.S., F.R.H.S., Director Botanic Gardens, Adelaide.  
 1883. \*HOWCHIN, WALTER, F.G.S., Lecturer in Geology and Palaeontology, University of Adelaide.  
 1911. HUGHES, HERBERT W., Booyoolie, Gladstone.  
 1912. JACK, R. L., B.E., Assistant Government Geologist, Adelaide.  
 1893. JAMES, THOMAS, M.R.C.S., Moonta.  
 1910. \*JOHNSON, E. A., M.D., M.R.C.S., Pirie Street, Adelaide.  
 1897. \*LEA, A. M., F.E.S., South Australian Museum, Adelaide.  
 1884. LENDON, A. A., M.D. (Lond.), M.R.C.S., Lecturer in Obstetrics, University of Adelaide, and Hon. Physician, Children's Hospital, North Adelaide.  
 1856. LLOYD, J. S., Alma Chambers, Adelaide.  
 1888. \*LOWER, OSWALD B., F.E.S. (Lond.), Broken Hill, New South Wales.  
 1905. \*MAWSON, DOUGLAS, D.Sc., B.E., Lecturer in Mineralogy and Petrology, University of Adelaide.  
 1874. MAYO, GEO. G., C.E., 116, Franklin Street, Adelaide.  
 1907. MELROSE, ROBERT THOMSON, Mount Pleasant.  
 1897. \*MORGAN, A. M., M.B., Ch.B., Angas Street, Adelaide.  
 1907. MUECKE, HUGO, C.E., Grenfell Street, Adelaide.  
 1884. MUNTON, H. S., North Terrace, Adelaide.  
 1913. OSBORN, T. G. B., M.Sc., Professor of Botany, University of Adelaide.  
 1886. POOLE, W. B., Savings Bank, Adelaide.  
 1911. POOLE, T. S., B.A., LL.B., Solicitor, Adelaide.  
 1908. POPE, WILLIAM, Solicitor, Adelaide.  
 1907. PUILLEINE, R. H., M.B., North Terrace, Adelaide.

1907. **PURDUE, R. F.**, Mining Agent, St. Helen's, Tasmania.  
 1885. \***RENNIE, EDWARD H.**, M.A., D.Sc. (Lond.), F.C.S., Professor of Chemistry, University of Adelaide.  
 1913. **RIDDLE, A. R.**, Yorketown, Yorke Peninsula.  
 1911. **ROACH, B. S.**, Education Department, Flinders Street, Adelaide.  
 1905. \***ROGERS, R. S.**, M.A., M.D., Flinders Street, Adelaide.  
 1869. \***RUTT, WALTER, C.E.**, College Park, Adelaide.  
 1891. **SELWAY, W. H.**, Treasury, Adelaide.  
 1893. **SIMSON, AUGUSTUS**, Launceston, Tasmania.  
 1871. **SMITH, ROBERT BARR**, Adelaide.  
 1906. **SNOW, FRANCIS H.**, Adelaide.  
 1910. \***STANLEY E. R.**, Government Geologist, Port Moresby, Papua.  
 1881. \***STIRLING, EDWARD C.**, C.M.G., M.A., M.D., F.R.S., F.R.C.S., Professor of Physiology, University of Adelaide, Hon. Director of South Australian Museum.  
 1907. **SWEETAPPLE, H. A.**, M.D., Park Terrace, Parkside.  
 1897. \***TORR, W. G.**, LL.D., M.A., B.C.L., Brighton, South Australia.  
 1894. \***TURNER, A. JEFFERIS**, M.D., Wickham Terrace, Brisbane, Queensland.  
 1878. \***VERCO, JOSEPH C.**, M.D. (Lond.), F.R.C.S., Lecturer on the Principles and Practice of Medicine, University of Adelaide, and Consulting Physician Adelaide Hospital and Children's Hospital.  
 1883. **WAINWRIGHT, E. H.**, B.Sc. (Lond.), McLaren Vale.  
 1912. **WARD, LEONARD KEITH**, B.A., B.E., Government Geologist, Adelaide.  
 1878. **WARE, W. L.**, Adelaide.  
 1859. **WAY, RIGHT HON. SIR SAMUEL JAMES, Bart.**, P.C., D.C.L., Chief Justice and Lieutenant-Governor of South Australia, Adelaide.  
 1907. **WEBB, NOEL A.**, Barrister, Waymouth Street, Adelaide.  
 1904. **WHITBREAD, HOWARD**, Currie Street, Adelaide.  
 1912. **WHITE, CAPTAIN S. A.**, "Weetunga," Fulham, South Australia.  
 1912. \***ZIETZ, F. R.**, South Australian Museum.

#### ASSOCIATE.

1904. **ROBINSON, MRS. H. R.**, "Las Conchas," Largs Bay, South Australia.

## APPENDICES.

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*FIELD NATURALISTS' SECTION*

OF THE

Royal Society of South Australia (Incorporated).

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THIRTIETH ANNUAL REPORT OF THE  
COMMITTEE.FOR THE YEAR ENDED SEPTEMBER 16, 1913.

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Your Committee report with much pleasure that another successful year has been experienced by this Section of the Royal Society. The monthly meetings and the excursions held during the past twelve months have been well attended, and great interest has been shown by members in all branches of our work.

With the view of increasing the members' interest and simplifying the affairs of the Section, your Committee decided to issue a programme detailing the meetings and excursions of the year.

One or two official changes have to be recorded, notably the election to the Chair of Mr. E. H. Lock, F.R.H.S., who for so many years acted in the position of your Hon. Secretary, and the Committee desire to record their appreciation of the valuable work accomplished by Mr. Lock in the interests of the Section.

After many years of faithful and diligent service in the interests of Science we regret to announce, owing to ill-health, the resignation of Mr. M. Symonds Clark as Secretary of the Fauna and Flora Protection Committee, a position which he has filled with much credit and success. We hope that Mr. M. Symonds Clark will be able to still interest himself in the affairs of the Society.

We regret also to record the passing of an esteemed member, Mr. John Fox Mellor, of Fulham, who for many years showed unflinching interest in the welfare of the Section.

Too much stress cannot be laid upon the importance of leaders for our excursions, all of which have been well attended during the year, and the Section is indebted to the gentlemen who have volunteered their services in this respect. During the year the membership has increased, and among the names

enrolled are those of Mr. Walter Gill, Conservator of Forests; Captain White, Ornithologist; and Professor and Mrs. T. G. B. Osborn, of the Adelaide University. Such additions are gratifying, and will greatly strengthen our botanical researches.

Dealing with the meetings, the first to chronicle is the last annual meeting, at which were elected the following officers:—

*Chairman*—Mr. E. H. Lock, F.R.H.S.

*Vice-Chairmen*—Messrs. A. G. Edquist and A. M. Lea.

*Honorary Secretary*—Mr. P. H. E. Runge.

*Honorary Treasurer*—Mr. B. Beck.

*Minute Secretary*—Miss Hocking.

*Committee*—Drs. R. S. Rogers and R. Pulleine, Messrs. W. H. Selway, J. W. Kimber, and J. W. Mellor, and Mesdames J. F. Mellor and R. S. Rogers.

*Auditors*—Messrs. J. S. Lloyd and W. D. Reed.

The annual address was delivered by the retiring Chairman of the Section, Dr. R. Pulleine, who took as his subject "Nature Study at Home." The lecture, by means of a series of lantern slides, illustrated the number of varieties of trees and shrubs growing within the metropolis, particularly in the Botanic Gardens and Park, and in explaining them stated that ample scope was afforded ardent botanists for investigations without leaving the city areas. He pointed out the timber value of Australian trees, and made an appeal for their preservation and conservation. The Chairman concluded his address with a strong appeal for Herbaria in Adelaide, to be brought up to date in the same state of classification and preservation as that of Economic Botany of Sydney to be seen in the Museum of that city.

October 15, 1912.—This evening was devoted to the description of exhibits by members. It is gratifying to note that this interesting part of the work maintains its popularity, showing that in collecting specimens members are fully alive to the objects of field work. Mr. J. G. O. Tepper exhibited specimens of radio-active ores from Mount Painter. A rare fossil of bracken fern, in solidified volcanic dust, and glaciated stones, were tabled by Mr. A. G. Edquist. Mr. A. M. Lea showed two cases of Queensland beetles, and Dr. Rogers and Mr. J. M. Black dealt with orchids and native pines respectively. Miss Roberts tabled an interesting mineral specimen composed of calcite and iron. Mr. Stokes showed a number of shells, and *opercula* were exhibited by Miss Phillipson.

November 19, 1912.—Mr. H. H. Corbin, B.Sc., gave a lecture on "Things interesting in Forestry." He referred to

the forest areas in Australia and other parts of the world, and indicated the immense value of the timber industry. The world's production did not nearly equal the rate of consumption, and if the same ratio continued a timber famine must occur. The utility of forest areas in South Australia on a reasonable scale had been proved beyond doubt, and this was Australia's opportunity, because Australia lends itself to timber cultivation.

April 15, 1913.—The winter course of monthly meetings was resumed on this date, when Mr. E. R. Stanley, Papuan Government Geologist, delivered an address on "Gleanings from Papua." The lecturer, by means of a large number of lantern slides, was able to illustrate the industrial progress of Papua, the importance of the industries, and the manners and customs of the people. The native fauna was varied, and included many species not common to Australia. Over 2,000 species of native plants were known, and included most of the most valuable of tropical cereals and other plants, which grew in abundance. The mineral resources of Papua were also dealt with, and were shown to be very valuable. A large number of native objects were exhibited by Mr. Stanley.

May 20, 1913.—Mr. W. J. Kimber gave an address on "Bivalve Mollusca," which he illustrated with a collection of beautiful shells. The lecturer described the mollusc, which lives in the shell, and the method by which it obtained food from sea water, as well as the means by which the valves were opened and closed. Several exhibits were tabled by the members, including several found by Mrs. J. F. Mellor on Capricorn Island; two from the Fijian coast, by Mr. P. H. E. Runge; and several by Mr. S. Angel. Mr. A. M. Lea exhibited a box of beautiful ants, bees, and wasps which were forwarded from Queensland by Mr. F. P. Dodd.

June 17, 1913.—Mr. H. Basedow, M.D., Ph.D., delivered an address on "Scientific Research in Central and Northern Australia," conducted during his journey to the Northern Territory. The lecturer illustrated the different stages of his trip, the customs of the natives, the geological nature of the country, and many curious and rare native stone carvings and drawings stated to be new to science. On Bathurst Island Dr. Basedow discovered a native burial-ground of four carved pillars, showing the surrounding ground cleared to keep away evil spirits. The geological conditions of the North Coast and some most important scientific discoveries, stated to include those of extinct reptiles, were referred to by Dr. Basedow.

July 15, 1913.—An interesting address on "Types of English Vegetation" was delivered by Mrs. T. G. B. Osborn, M.Sc. Reference was made to the different types of vegetation which,

through forest destruction and cultivation, are now fast disappearing in England. The English species were closely allied to those of the Continent, from which they were introduced after the passing of the ice age. Geological, soil, and climatic conditions have an important bearing on plant life. Mrs. Osborn said that the whole of England was mapped for surveying vegetation, by means of vegetation maps, so as to indicate just where the different plant-colonies are; but it was somewhat difficult to determine the area of plant-communities, as there was now only a small part of the country covered by forests. The wholesale destruction of these forests in England has been the means of an entirely different vegetation occupying the ground in the now peaty and water-logged country. Much of the famous moorlands, heathlands, and fernlands were useless on this account. Several beautiful slides of English wild flowers were shown by Mrs. Osborn.

#### EXCURSIONS.

During the year fifteen excursions were held, and a wide range of field and marine work was covered. The attendances were satisfactory, and members were able to add considerably to their knowledge and to their natural history collections.

On September 28, 1912, the Waterfall Gully was visited and investigations were conducted in the upper reaches of the creek. Operations were somewhat hampered by the destruction of native flora that had occurred by fire, and only a limited number of species was collected.

On October 9 a whole day was devoted to visiting Hermitage, a somewhat unfrequented spot, north-west of Houghton. Members found the country typically representative of our native flora, and surprise was expressed at the field of exploration that it afforded members. Hermitage is proud of its reputation as an orchid ground, and no fewer than twenty species were discovered in flower, the majority by Dr. and Mrs. R. S. Rogers. The scrub-lands also afforded many opportunities for garnering in a wide selection of blooms, while the gullies and the swamps also proved useful collecting grounds. Mr. H. H. D. Griffiths discovered some fine specimens of the genus *Marchantia* sp., while an interesting collection of fungi and mosses, numbering eighteen or twenty species, was made by Professor and Mrs. T. G. B. Osborn, who explained them to the members. The weather was most unfavourable for entomological work, yet many uncommon specimens were brought to light by our hard-working entomologist, Mr. Griffiths.

On October 19 the Section visited Slape Gully, which is approachable by foot only. At this time of the year orchid

hunting is zealously pursued, but it cannot be said that Slape Gully offers a profitable hunting-ground for these flowers, which were found to be sparsely scattered. Twelve species were recorded. On the hillsides were many alien plants growing in profusion, interspersed with colonies of native flora, many species of which were collected for identification later. Several fresh-water shells were found in the creek bed, and these formed the nucleus of an interesting chat by Mr. W. J. Kimber, on "Land Molluscs," which included the common snail, *Helix aspersa*, introduced here from Europe, and which is very destructive in our gardens. The keen smell of these molluscs, their rapaciousness, the fact that they can live years without food (instanced by the famous Sahara specimens that after being glued for five years to cards in the British Museum were found after immersion in lukewarm water to be alive) was commented upon. Mr. Kimber also spoke of the many beautiful tropical land shells that lived in trees and other singular places, and said that owing to the dry climate of South Australia the number of species found was not large.

On November 27, 1912, the annual outing, which is regarded as somewhat of a social event, took place at Scott Creek, Mount Lofty. A very enjoyable afternoon was spent through the kind hospitality of the Chairman of the Section, Mr. E. H. Lock, who entertained members at tea.

On February 15, 1913, a dredging excursion was conducted in Gulf St. Vincent, opposite the Semaphore, under the leadership of Dr. Pulleine and Messrs. Kimber and Baker. One of the essential features for successful marine work is good weather conditions, which fortunately ruled for the day. Mr. A. G. Edquist gave a running explanation of all objects brought to the surface by the dredge. An interesting collection was obtained, among which were brightly-coloured sponges and sea-weeds, delicate sea-spiders, hydromedusæ, starfish, marine worms of many colours, and sea-urchins of various shapes and sizes. Interesting examples of parasitism were observed, the parasites consisting of minute forms of crustacea, resembling shrimps. A fine specimen of sea-squirt was captured, an animal having an outer skin of cellulose, a substance common to the plant world, and that, in the later stages of its life, developed a process akin to the backbone of the higher forms of animals, and in all probability represents an ancient form from which the vertebrates were evolved. A small, strange fish, resembling a Blinnie, was caught and forwarded to the South Australian Museum for identification.

On April 26, 1913, an expedition was conducted by Mr. A. G. Edquist from Upper Sturt, *via* Waverley Ridge, to Mount Lofty. The autumn tints, which are usually brilliant



at this time of the year, were, to the disappointment of members, absent. Mr. Edquist gave an interesting address upon "Autumn Tints and their Causes," which he demonstrated with interesting experiments, including the separation of the green, yellow, and red colouring matter found in the changing leaves of the surrounding trees and shrubs.

On May 24, 1913, an excursion was conducted through the Botanical Gardens, under the guidance of Dr. Holtze, I.S.O., where the various departments were visited by the members.

On June 9, 1913, a whole-day excursion was made to Hallett Cove. Many interesting plants were found in its neighbourhood, including the *Chara*, which, when decayed, has the peculiar property of forming limestone from its casing. Mr. A. G. Edquist pointed out the various botanical and geological features of the country, and much interest was shown in the erratics, huge glacial rocks, some foreign to South Australia, which had been distributed by the ancient glacier. The contorted state of the rocks and their numerous faults were also pointed out. Mr. W. J. Kimber was in charge of the marine life section, and named the shells discovered on the sands by the members. Reference was also made to the limpet and periwinkle, which were vegetarians, browsing around and obtaining their food on algæ, while the *Murex*, the common whelk, the melo, and the starfish were carnivorous, and lived on other animals. Considerable interest was taken in the *Littorina*, a shell which is evidently passing through a process of evolution. It is able to live fourteen days above high-water mark, and will in all probability become a land shell.

On June 28 a visit was made to the National Museum, where members placed themselves under the direction of Professor E. C. Stirling, M.D., F.R.S., and a most profitable afternoon was spent.

On July 26 the members availed themselves of the kind invitation of Mrs. Kimber and visited Klemzig, where the party was most hospitably received. Part of the afternoon had been spent in exploring the foothills at Highbury, and it was regretted that the whole of the available time had not been devoted to the inspection of Mr. Kimber's famous collection of shells, numbering in all about 7,000. The collection is not only rich in Australian shells and fossils, but contains beautiful specimens from all parts of the world, and afforded the members a most instructive afternoon. It is proposed to accept Mr. Kimber's kind invitation to visit them next year.

On August 15 an evening visit was paid to the Observatory where, under the guidance of Mr. Dodwell, B.A., the Society was afforded an opportunity of becoming acquainted with some of the wonders of the Universe. By means of lantern slides

Mr. Dodwell illustrated many of the important discoveries made in the heavens. With the aid of powerful telescopes members came into much closer vision with some of the planets and their moons as well as our own satellite.

On August 16 a useful afternoon was spent at Mr. R. Osborne's, Clarence Park, inspecting his collection of some hundreds of native and foreign birds, which he has splendidly housed under natural conditions. Afterwards members accepted Mr. and Mrs. Osborne's kind invitation to join them at refreshments.

On September 6 new ground was broken in visiting the Torrens Gorge, *via* Athelstone. Under the leadership of Professor T. G. B. Osborn the party alighted and traversed the Torrens bed, where the mosses and other examples of the flora were found to be somewhat sparse, due to the dryness of the season; nevertheless, members were able to make a satisfactory collection, and on arrival at the Gorge, Professor Osborn addressed the members. He dealt with the species of native flora found, and then proceeded with an interesting dissertation on mosses and their manner of propagation, and mentioned the similarities and differences which they present to other plants. Dr. R. S. Rogers explained to members the structure of orchids found on the hillsides, referring especially to the means adopted by these flowers to encourage fertilization.

During the year Mr. J. M. Black recorded the discovery of a specimen of *Bremophila subflucnuosa*, found at Coorabie, on the Australian Bight, it being the first specimen found in South Australia, and hitherto supposed to be a native of Western Australia only. Another interesting discovery recorded by Mr. Black was the male yellow *Microcalis quadrangularis*, at Knightsbridge, its *habitat* being California and South America.

E. H. LOCK, *Chairman*.

PERCIVAL H. E. RUNGE, *Hon. Secretary*.

[CORRECTION.—In the synopsis published in the last Report (1912), of my address, read September 19, 1911, I am made to say that Mr. Jas. Page, of Mitcham, was "practically the founder of the National Park, Belair." In the address itself (see page 248, vol. xxxv.) I described the temporarily successful efforts of Messrs. Page and Gooch on two occasions in preventing the sale of what was then the Government Farm; but the actual foundation of the Park was my motion, "That the Government Farm be declared a public park and handed over to trustees to manage." The result after three years' strenuous and continuous agitation was the National Park as now constituted. I therefore insist that I was the "founder," being just in time to frustrate the third attempt to sell the land, so that it is now a park in perpetuity.—SAMUEL DIXON.]

TWENTY - FIFTH ANNUAL REPORT OF THE  
NATIVE FAUNA AND FLORA PROTECTION  
COMMITTEE OF THE FIELD NATURALISTS'  
SECTION OF THE ROYAL SOCIETY OF SOUTH  
AUSTRALIA FOR THE YEAR ENDED SEPTEMBER,  
1913.

The work of the Committee has been chiefly centred, in conjunction with the Council, in urging on the Government the importance of bringing in a Bill for the setting apart of "Flinders Chase," Kangaroo Island, as a National Park and Fauna and Flora Reserve under the control of a Board of Governors. The Chairman of this Committee has co-operated with the Parliamentary Draftsman in the preparation of this Bill, which is now ready for introduction to the House.

Other matters connected with the protection of marsupials and our native birds have had the Committee's attention.

EDWIN ASHBY, *Chairman.*

BALANCE-SHEET OF FIELD NATURALISTS' SECTION OF THE  
ROYAL SOCIETY OF SOUTH AUSTRALIA.

CR.							£	s.	d.
Sept. 16, 1912.	By Credit Balance	...	...	...	...	...	1	6	5
	„ Grant from Royal Society	...	...	...	...	...	10	0	0
June 30, 1913.	„ Bank Interest	...	...	...	...	...	0	4	9
	„ Members' Subscriptions	...	...	...	...	...	17	2	6
Sept. 16, 1913.	„ Grant from Royal Society	...	...	...	...	...	10	0	0
							£38	13	8
DR.							£	s.	d.
To Printing	...	...	...	...	...	...	10	19	9
„ Postages	...	...	...	...	...	...	3	2	5
„ Hire of Lantern and Hall	...	...	...	...	...	...	4	9	10
„ Advertising	...	...	...	...	...	...	0	12	6
„ Members' Subscriptions paid to Royal Society	...	...	...	...	...	...	17	2	6
„ Balance	...	...	...	...	...	...	2	6	8
							£38	13	8

Audited and found correct,

J. S. LLOYD,  
WALTER D. REED, F.C.P.A., } *Auditors.*

Adelaide, September 16, 1913.

# MALACOLOGICAL SECTION

## OF THE

### Royal Society of South Australia (Incorporated).

ANNUAL REPORT FOR THE YEAR 1912-13.

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Ten meetings have been held this year, in which the following genera have been examined and discussed:—(*Calliostoma*, *Astele*, *Fossaria*, *Euchelus*, *Basilissa*, *Keimostoma*, *Nerita*, *Eulima*, *Melanella*, *Leiostraca*, *Mucronalia*, *Diastoma*, *Syrnola*, *Odostomia*, *Oscula*, *Parthenia*, *Eulimella*, *Turbonilla*, *Congulina*, *Crossea*, *Architectonica*, *Heliucus*, *Carinaria*, and *Stilifer*. About 80 species have been classified.

The President has shown a number of models illustrating the peculiar growth in the protoconch of shells.

There are 14 members on the roll. The average attendance has been 6·3.

The members are:—Mrs. and Miss Robinson, Miss Stenhouse, Dr. Verco, Dr. Pulleine, Rev. W. Howchin, Messrs. F. R. Zeitz, W. D. Reed, W. J. Kimber, F. S. Saunders, E. G. Saunders, and Errol Hauley and Dr. Torr.

Dr. Verco was elected President, and Dr. Torr, Hon. Secretary and Treasurer, for the year 1913-14.

#### RECEIPTS AND EXPENDITURE FOR THE YEAR 1912-13

Receipts.				£	s.	d.
To Grant from Royal Society	...	...	..	3	0	0
„ Subscriptions from Members	...	...	..	3	10	0
				£6	10	0
Expenditure.				£	s.	d.
By Debit Balance, 1911-12	...	...	...	1	12	7
„ Notebook and Postages	...	...	...	0	1	6
„ Subscription to Royal Society	...	...	...	3	10	0
„ Credit Balance	...	...	...	1	5	11
				£6	10	0

WILLIAM G. TORR, *Hon. Secretary and Treasurer.*

## MICROSCOPICAL SECTION

OF THE

Royal Society of South Australia (Incorporated).

## ANNUAL REPORT, 1912-13.

OFFICERS.—*Chairman*, Mr. W. B. Poole; *Vice-Chairman*, Mr. W. Fuller; *Committee*, Messrs. B. S. Roach, D. Gordon, and W. H. Baker; *Auditors*, Messrs. A. G. Randall and H. Whitbread; *Hon. Secretary*, Mr. E. J. Bradley.

Your Committee has to report that the tenth session now concluded has been one of progress, as throughout a good attendance of the members has been sustained, and the work during the various meetings has been of great interest. A feature of this session has been the incorporation of the study of the aquaria with that of microscopy, in accordance with the recommendation of a Committee comprising Messrs. Fuller, Edquist, Bradley, Beykirch, and Geislar, who were appointed as an Aquarium Committee.

The following meetings have been held during the year:—

October 22, 1912.—Annual General Meeting. Election of officers. Slides of interest were exhibited by Mr. E. J. Bradley. Mr. Lea exhibited parasite on tongues of blowfly and wasp from Tasmania.

November 26.—Mr. Poole exhibited parasite of wasp. Mr. Lea exhibited various species of weevils. Mr. E. J. Bradley gave an account of the aquaria in the Eastern States, and also a description of the study of aquaria as practised in Europe. Aquarium Committee appointed.

March 25, 1913.—Report of Aquarium Committee received. Mr. Lea exhibited insect-catching grass from Cairns, Queensland. Mr. Poole exhibited the fresh-water hydroid, *Cordylophera lacrustis*, from Hindmarsh River. Mr. D. F. Laurie exhibited microphotographs of ectoparasites of poultry and spirochæte of poultry, fever supervening the attacks of *Argus persicus*. Mr. Bradley gave a description of the life habits and embryology of the paradise fish, *Polyacanthus viridis auratus*. Mr. Geislar exhibited living specimens of the fish.

April 22.—Mr. Beykirch exhibited the climbing perch of the East Indies (*Anabas scandens*). Mr. Bradley exhibited the fan-horned beetle from Renmark (*Rhipidocera femoralis*). Mr. Roach exhibited mounted slides of medusa and other

hydroids, and epistilis and section of rind of orange. Mr. Bradley explained by blackboard demonstration the life history of *Obelia geniculata*.

May 24.—The Chairman reported that an excursion to Patawalonga River had been held on the previous Saturday, and described species of rotifers found, especially referring to *Acustes stygis*. Mr. Showell exhibited slides of *Pleurosigma* from the Port River (mounted in styrax). Mr. D. F. Laurie read a paper, elaborately illustrated with microphotographs, dealing with the ectoparasites of poultry in this State.

June 24.—Mr. A. M. Lea exhibited minute weevils (*Misophrice*, sp. ?) from the sheaoak. Mr. Geislar exhibited Japanese gold-fish that were infested with microscopic leeches.

July 22.—Professor T. Brailsford Robertson, D.Sc., University of California, gave a lecture on "Some Factors in the Cell-growth of Tumors."

August 26.—The Rev. T. Ward exhibited slides of European hydroids, viz., *Clytia johnstonii*, *Gonothyrea loreuii*, *Pennaria cavolina*, *Eudendrium rameum*, and *Halicyclastus octoradiata*. Mr. Lea exhibited a "Zeitz" entomologist's microscope stand. Mr. Matthews exhibited polyzoa and hydroids from Port Victor. Mr. E. J. Bradley gave an aquarium paper on "The Habits, Varieties, Sexes, and Breeding Habits and Embryology of the Japanese Fantailed Gold-fish."

DAVID GORDON, *Acting Chairman*.

#### BALANCE-SHEET, SESSION 1912-13.

Receipts.				£	s.	d.
To Balance brought forward from Session 1911-12	..			3	17	9
„ Subscriptions, 1912-13	...	...	...	3	15	0
„ Grant from Royal Society, 1912-13	..	...	..	3	15	9
				£11	8	6
Expenditure.				£	s.	d.
By Stationery, Postage, Printing, 1912-13	...	..	..	2	11	8
„ Subscriptions, etc., paid to Royal Society	...	..	..	3	15	9
„ Hire of Lecture Hall and Episcope	...	..	..	0	15	4
„ Balance in Hand	...	...	...	4	5	9
				£11	8	6

EDGAR J. BRADLEY, *Hon. Secretary*.

Audited and found correct with vouchers produced.

ALEXR. G. RANDALL, } *Auditors*.  
HOWARD WHITBREAD, }

September 22, 1913.

## GENERAL INDEX.

[Generic and specific names printed in italics indicate that the forms described are new.]

- Acacallis*, 301; *A. personata*, 302.  
*Acalles expletus*, 302.  
*Achopera*, 415: *A. bifasciata*, 281;  
*isabellana*, 282; *parra*, 281; *sabu-*  
*losa*, 283.  
*Achoperimus*, 415.  
*Achrysocharelloidea*, 109; *A. pax*, 109.  
*Achrysocharis leibnitzii*, 110.  
*Achrysocharoides*, 72.  
 Additions to South Australian Or-  
 chideæ, 125.  
 Additions to the Flora of South  
 Australia, 121.  
*Agathicis*, 284; *A. distinctus*, 284.  
*Alatidotasia elliptica*, 299; *macrops*,  
 300; *rubriventris*, 299.  
*Amarantus albus*, 123.  
*Amaryginæ*, Notes and Tabulation  
 of, with Descriptions of New  
 Species, 6.  
*Amarygmus aborigine*, 39; *alienus*,  
 33; *anthracinus*, 32; *bicolor*, 33;  
*carbo*, 38; *corpulentus*, 40;  
*femoratus*, 43; *frenchi*, 34; *gem-*  
*matus*, 44; *hackeri*, 44; *indigaceus*,  
 33; *kershawi*, 42; *kurandæ*, 45;  
*maurulus*, 34; *minutus*, 34; *morio*,  
 34; *rufescens*, 41; *sphaeroides*, 38;  
*tasmanicus*, 33; *tibialis*, 40; *tristis*,  
 32; *tropicus*, 42; *uniformis*, 33.  
 ——— Synonymy of, 32.  
 ——— Table of Species of, 35.  
*Amerostenus*, 79; *A. australiensis*, 79.  
*Amonodontomerus*, 99; *A. viridis*, 99.  
*Amorphocis*, 362; *A. mirus*, 362.  
*Amoturella*, 110; *A. saintpierrei*, 110.  
*Ampagia hystrix*, 298.  
*Amuscidea*, 107; *A. nigripes*, 108.  
*Amydala tarsalis*, 443.  
*Anagyrus channingi*, 111; *emersoni*,  
 113; *penni*, 112; *saintpierrei*, 112.  
*Anchithyrus reticulatus*, 272.  
*Ancosis*, 421; *A. collaris*, 422.  
*Angianthus whitei*, 122.  
*Anilaus costirostris*, 412.  
 Annual Meeting, 459; Report, 460.  
*Anoplocis*, 376; *A. ferrugineus*, 377.  
 Antarctic Explorers, Remarks by the  
 President, 452.  
*Anteromorpha*, 145; *A. assimilis*,  
 146; *australica*, 146.  
 Ants, Isopod Crustacea found in  
 Nests of, 116.  
*Aonychus striatus*, 196.  
*Aphotismus*, 101; *A. niger*, 101.  
*Aplatygerrhus*, 77; *A. magnificus*, 77.  
*Apterosemidea*, 103; *A. nigri-*  
*viridis*, 103.  
*Apterosemoidella*, 103; *A. bioculata*,  
 104.  
*Asaphomorpheila*, 104; *A. rousseaui*,  
 105.  
 Ashby, E. Exhibit: grass parrots,  
 457.  
*Astilbula*, 96; *A. magnifica*, 96; *pur-*  
*purea*, 97.  
*Atihycocis*, 267; *A. albonotatus*, 270;  
*echinatus*, 268; *nigronotatus*, 271;  
*tarsalis*, 268; *tibialis*, 269.  
 ——— Table of Species of, 268.  
 Australian Hymenoptera, 130.  
*Axonionus insignis*, var. *interioris*,  
 201.  
*Bæodontocis*, 360; *B. megapholus*,  
 361.  
*Bæoncura giraulti*, 176.  
 Baker, W. H., Isopod Crustacea  
 found in Nests of Ants, 116.  
 Balance-sheets, 464, 465.  
 Bepharus, 415.  
*Berosiris*, 306; *B. calidris*, 307;  
*tanyrhynchus*, 307.  
 Black, J. M., Additions to the Flora  
 of South Australia, 121; Flowering  
 and Fruiting of *Pectinella antarctica*,  
 1.  
*Bothynacrum ochreconotatum*, 233,  
 339.  
*Brachycis*, 277; *B. thoracicus*, 278.  
*Brachyporopterus montanus*, 366.  
*Bruchophagus niger*, 82.  
 Brunskill, G., Decease of, 456.  
 Byrsia, 302; *B. cerata*, 302.  
*Caleana minor*, 125.  
*Callitris drummondii*, 123.  
*Calocerineloides*, 111; *C. ramosa*, 111.  
*Calosoter coleopterorum*, 91.  
*Camptorrhinus inornatus*, 444; *inter-*  
*stitialis*, 444.  
*Cardiopterocis*, 260; *C. variegatus*,  
 261.  
 Carter, H. J., Notes on and Tabula-  
 tion of the Australian Amaryg-  
 minæ, 6.  
*Catocalphe*, 298; *C. minans*, 298.  
*Ceratoteleia bella*, 142; *brunnea*, 141;  
*eximia*, 144; *fusciata*, 143; *flava*,  
 140; *fusca*, 176; *gloriosa*, 174; *inor-*  
*nata*, 141, 175; *magnifica*, 142;  
*nigra*, 175; *enulchra*, 142; *splendida*,  
 140; *superba*, 174; *venusta*, 174.  
 ——— Table of Australian Species  
 of, 144.  
*Chætetectorus cinerascens*, 417.  
*Chalcopterus amethystinus*, 10; *an-*  
*gusticollis*, 19; *arthuri*, 13; *casar*,  
 16; *cresus*, 13; *cupreus*, 11, 14;  
*cupricollis*, 11; *cupripennis*, 11;  
*cupriventris*, 13; *cyanus*, 24;  
*doddi*, 18; *elongatus*, 20; *gilesi*,  
 17; *grandis*, 8; *imperialis*, 9;

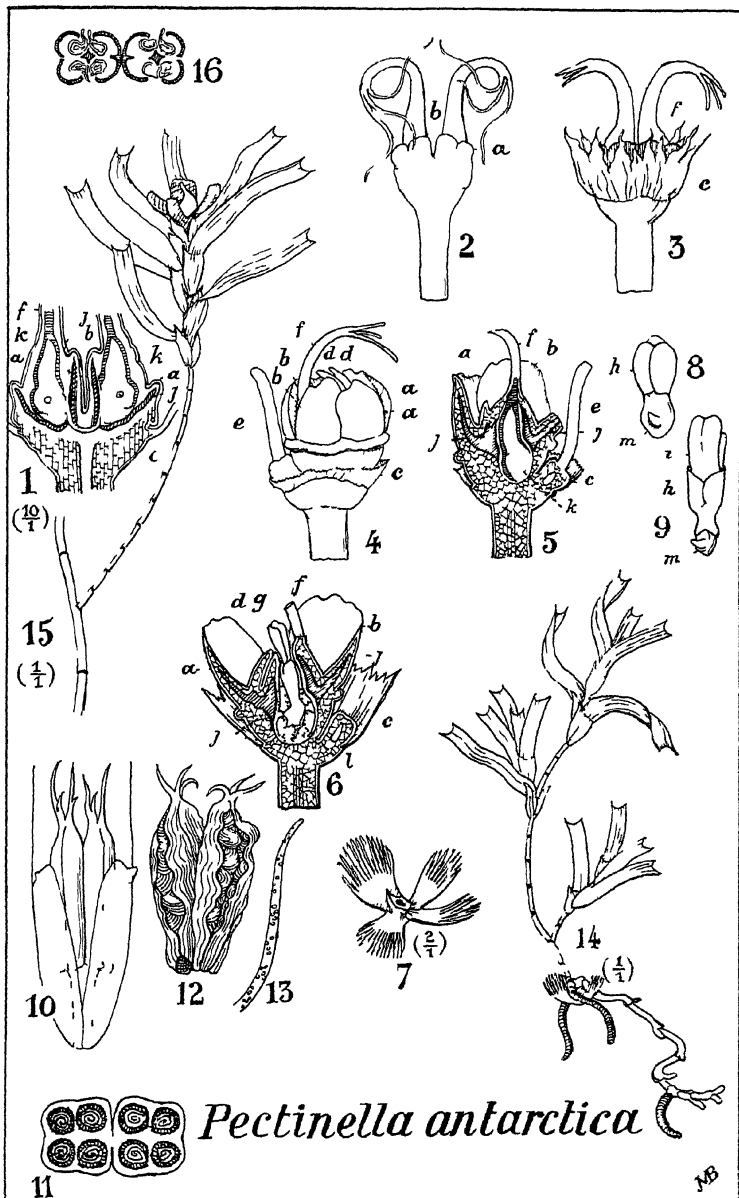
- iridescens*, 22; *laticollis*, 11; *latifrons*, 23; *longipennis*, 12; *maximus*, 15; *meyricki*, 12; *obsoletus*, 8; *opacicollis*, 8; *perlongus*, 9; *picipes*, 9; *prismaticus*, 21; *puncticollis*, 8, 15; *rufipes*, 8; *rugosus*, 12; *scrictatus*, 24; *setosus*, 9; *simius*, 13; *sulcipennis*, 9; *suturalis*, 13; *tenuicornis*, 12; *variabilis*, 9; *vinosus*, 13.
- Table of species of, 25.
- Chalcurella*, 94; *C. nigricyanea*, 94.
- Chalcureoides*, 115; *C. versicolor*, 115.
- Chimades*, 415.
- Chloris divaricata*, var. *minor*, 124.
- Onodulon picicorne*, 35.
- Comets, Astronomical Society of Mexico, award for discoveries of, 451.
- Coptomerus*, 442; *C. nigrinasus*, 442.
- Cratomerocis*, 236; *C. flavonotatus*, 237.
- Crematoscelio*, 156; *C. aureus*, 157; *flavipes*, 157.
- Cryptorhynchids. Notes on, with Descriptions of New Species, 182.
- Cryptorhynchus apicipennis*, 232.
- Cubaris commensalis*, 117; *minuta*, 118.
- Curculionidæ, Description of Australian, 301.
- Cymodocca* (see *Pectinella*).
- Cyphodrocis*, 413; *C. dorsalis*, 414.
- Docilaus albonotatus*, 386; *apicatus*, 260; *auricomus*, 389; *bifurcatus*, 256; *bryophilus*, 381; *calriceps*, 259; *cuniculosus*, 389; *curvipes*, 254; *humeralis*, 255; *hystricosus*, 387; *inconstans*, 378; *lateralis*, 387; *longirostris*, 387; *mirabilis*, 258; *nigriclavus*, 383; *nigrinotatus*, 382; *nosomus*, 257; *ordinarius*, 256; *paroniger*, 382; *perditus*, 389; *striatus*, 384; *suturalis*, 385; *tibialis*, 260; *trivirgatus*, 258; *variegatus*, 379.
- Derbyiella laminata*, 442.
- Deretiosus copherus*, 283.
- Diaphorocis*, 346; *D. variegatus*, 346.
- Dichoteleas*, 133.
- Diethusa*, 303, 318; *D. acuticosta*, 194; *apicalis*, 318; *blackburni*, 194; *famelicula*, 194; *fervida*, 303; *funerea*, 190; *inermis*, 191; *nodipennis*, 193; *pallidicollis*, 192; *silacea*, 190; *sulfurca*, 319; *suturalis*, 189.
- Dimeromicrus australiensis*, 98.
- Dipodium punctatum*, 48.
- Dodd, Alan P., Australian Hymenoptera, 130.
- Dysopirhinus quadrinotatus*, 343.
- Dystropicus*, 307; *D. squalidus*, 307.
- Elæagna nodipennis*, 365; *squamibunda*, 366.
- Elasmus cairnsensis*, 97.
- Emydica*, 275; *E. brevisetosa*, 275.
- Enide cæstuanus*, 303; *porphyrea*, 304; *saniosa*, 304.
- Eocithara* (Harpa), 446.
- Ephrycus*, 415; *E. brachystylus*, 417; *minor*, 280; *variabilis*, 416.
- Episodiocis inconstans*, 234.
- Eriglyptodeus*, 70; *E. varicornis*, 70.
- Ethocis*, 426; *E. bifusciatus*, 428; *disricollis*, 427.
- Eucalyptocis*, 420; *E. fasciculatus*, 421.
- Eucharis eribotes*, 94; *fausta*, 94; *valgius*, 94.
- Eucharomorpha*, 94; *E. dubin*, 95; *fuscipes*, 95; *viridis*, 95.
- Eurucis*, 247; *E. multinodosus*, 248.
- Eurydinotella*, 105; *E. prima*, 106.
- Eurymetopocis*, 295; *E. bilobus*, 296.
- Euryporopterus cryptodermus*, 251.
- Eurystole*, 114; *E. vulgaris*, 114.
- Eurytoma lincolni*, 82; *mazzinii*, 114.
- Evaniocis*, 328; *E. albicans*, 330; *ellipticus*, 329.
- Exithius*, 394; *E. athyreus*, 397; *auchmeresthes*, 266; *basipennis*, 394; *brevis*, 404; *conjunctus*, 399; *cyclothyreus*, 395; *ephippiatus*, 263; *intermissus*, 397; *loculiferus*, 400; *megapholus*, 401; *obliquus*, 264; *obscurus*, 264; *occidentalis*, 402; *stenocerus*, 402; *tenebrosus*, 398; *tricarinatus*, 403; *trisinuatus*, 396; *tropidopterus*, 265.
- Table of Species of, 404.
- Fellows, Members, etc., List of, 478.
- Field Naturalists' Section, Annual Report, etc., 481.
- Flora of South Australia. Additions to, 121.
- Flowering and Fruiting of *Pectinella antarctica*, 1.
- Girault, A. A., a New Genus of Chalcidoid Hymenoptera, 65; New Genera and Species of Chalcidoid Hymenoptera in the South Australian Museum, 67.
- Grant, Prof. Kerr. Exhibit: The Rainbow Cup, 456.
- Grants in aid of scientific research, 456, 457, 461.
- Griffithia*, 122; *G. helipteroides*, 122.
- Gygæus*, 230; *G. prodigus*, 231; *squamiventris*, 231.
- Gyrolasella*, 71; *G. lineata*, 72.
- Hadronotus nigriclavatus*, 178; *nigricoxa*, 179; *pentatomus*, 154; *splendidus*, 179; *striatus*, 155.
- Harpa (*Eocithara*) *punctata*, 446.
- Helichrysum mellarianum*, 122.
- Hexymus alatus*, 345.
- Hibiscus trionum*, 121.
- Hopteleia acuminata*, 177; *australica*, 133; *grandis*, 176; *insularis*, 134; *nigricornis*, 134; *pulchricornis*, 134.
- Table of Australian Species of, 134.



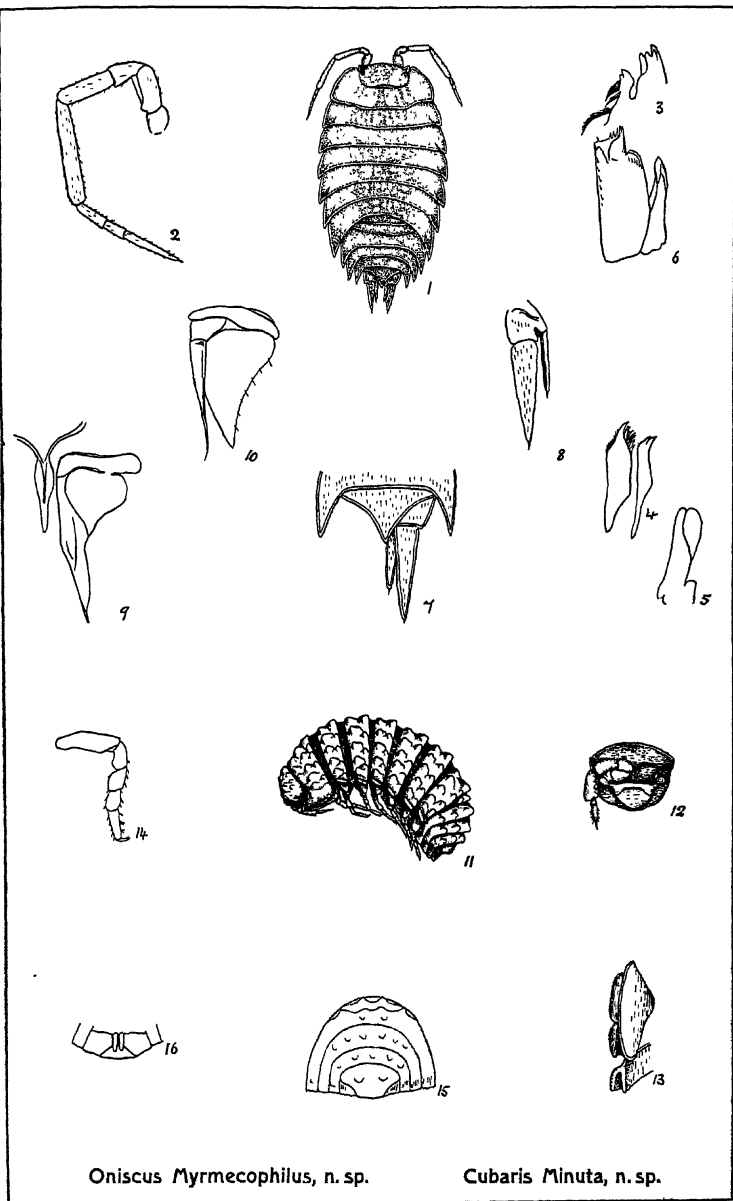
- Howchin, W.. Exhibit: an aboriginal subincised phallus, 451; subfossil emu's egg, 454; consolidated gravels from Findon, 459.
- Hymenoptera. A New Genus of Chalcidoid, 65.
- New Genera and Species of, in the South Australian Museum, 67.
- Hyperinus, 341; *H. dispar*, 342; *tenuirostris*, 342.
- Idarnoides*, 100; *I. channingi*, 101.
- Illustration of the Society's Transactions—Remarks by the President, 455.
- Imaliodes binodosus*, 273; *latipennis*, 274; *longipes*, 273; *opterus*, 409; *squamirostris*, 411; *ventralis*, 410.
- Indian Museum, Calcutta—By-laws with reference to loan of specimens, 450.
- Isax, 415; *I. planipennis*, 279.
- Isoplatoides*, 85; *I. bifasciatus*, 86; *bipustulatus*, 86.
- Isopod Crustacea found in Nests of Ants, 116.
- Johnson, Dr. E. A., Exhibit: ectoparasites, native spinach, etc., 453.
- Koebelea fusca*, 99.
- Lasaea scalaris*, 448.
- Lea, A. M., Notes on Cryptorhynchids with Descriptions of New Species, 182; Descriptions of Australian Curculionidae, 301.
- Exhibits: 451, 453, 454, 456, 457, 458, 459 (2).
- Leptopomorphia*, 87; *L. myersi*, 88.
- Leptoteleia australica*, 145.
- Leucothyreosis*, 229; *L. convexus*, 230.
- Library, Donations to, 466.
- Lister Memorial Fund, 453.
- Lybæba amplicornis*, 320; *squamivaria*, 320.
- Macrodontomerus*, 100; *M. triangularis*, 100.
- Macroteleia angusta*, 150; *cornuta*, 178; *magna*, 149; *minima*, 150; *torresia*, 150.
- Table of Australian Species of, 151.
- Malacological Section—Annual Report, etc., 489.
- Mallateleia*, 151; *M. giraulti*, 151.
- Mallateleoides*, 152; *M. splendida*, 152.
- Mechanism of Pollination in Certain Australian Orchids, 48.
- Mechistocerus*, 306; *M. basalis*, 199; *cancellatus*, 322; *cylindricus*, 197; *denticulatus*, 322; *denticulatus var. minor*, 322; *languidus*, 322; *marmoreus*, 196; *metasternalis*, 198; *similis*, 320.
- Megalocerus rufinotus*, 72.
- Megastigmus fuscicornis*, 81; *longicauda*, 81; *maculipennis*, 80; *tasmaniensis*, 80.
- Melanterius amplipennis*, 317; *apicalis*, 189; *baridioides*, 185; *bicalcaratus*, 183; *biseriatus*, 184; *cardiopterus*, 185; *compactus*, 188; *confusus*, 311; *congruus*, 316; *conspiciendus*, 317; *ellipticus*, 312; *fasciculatus*, 315; *floridus*, 188; *fugitivus*, 304; *hybridus*, 182; *imitator*, 315; *lamellatus*, 308; *laticornis*, 310; *legitimus*, 316; *leucophaeus*, 310; *maculatus*, 317; *mæstus*, 314; *mediocris*, 313; *minor*, 311; *nomophilus*, 309; *nirco-dispersus*, 187; *semiporeatus*, 188; *solitus*, 187; *stenocephalus*, 186; *tristis*, 189.
- Mellor, J. W., Resolution of the Society on the Death of, 454.
- Memoirs of the Society, Publication of, 454.
- Meniomorpha inconstans*, 290.
- Menios*, 285; *M. alternatus*, 425; *sinuatus*, 285.
- Meraporus nigri-viridis*, 91.
- Metyrculus bimaculatus*, 426; *cinctus*, 288; *mediofasciatus*, 286; *mediomaculatus*, 287; *sinuatus*, 289.
- Metyrus albicollis*, 424.
- Microberosiris*, 200; *M. albus*, 200; *exilis*, 200.
- Microscopical Section, Annual Report, etc., 490.
- Microtis parviflora*, 128.
- Mirotelcnomus*, 173; *M. abnormis*, 173.
- Morgan, Dr. A. M., Exhibit: fulgurite from the Reedbeds, 458.
- Neapterolelaps*, 86; *N. lodgei*, 87.
- Neokapala*, 92; *N. furcatella*, 92.
- Neolybæba*, 195; *N. remota*, 196.
- Neomelanterius interruptus*, 195; *subtuberculatus*, 320.
- Neomphaloidella*, 69; *N. fasciati-ventris*, 69.
- Neomystocis viridis*, 340.
- Neoscelio*, 138; *N. gloriosus*, 138.
- Neotelcnomus*, 171; *N. anthracæ*, 171; *leai*, 172; *minimus*, 172; *niger*, 172; *ovivorus*, 172.
- Table of Species of, 173.
- New Genera and Species of Chalcidoid Hymenoptera in the South Australian Museum, 67.
- New Genus of Chalcidoid Hymenoptera, 65.
- Notes and Tabulation of the Australian Amarygminæ, 6.
- Notocalviceps punctipennis*, 346.
- Odosyllis laminata*, 412; *scutellaria*, 278.
- Officers, Election of, 459.
- Omydaus longus*, 374; *nigrofasciculatus*, 375; *parviceps*, 252; *rostralis*, 373; *sculptilis*, 253; *tiabilis*, 252.
- Onidistus odiosus*, 304.

- Oniscus myrmecophilus*, 116.  
*Ooderelloides*, 89; *O. nigripurpurea*, 89; *pax*, 89; *splendidus*, 89.  
*Ophrythyrocis*, 245; *O. caophthalmus*, 246; *ferrugineus*, 359; *microps*, 360; *valgus*, 246.  
*Opisthacantha australica*, 147; *nigricaps*, 147; *unicolor*, 178.  
*Orasema pheidolophaga*, 96.  
Orchideæ, Additions to South Australian, 125.  
Orchids, Mechanism of Pollination in Certain, 48.  
*Ormyromorpha*, 83; *O. trifasciata*, 84; *trifasciatipennis*, 83.  
*Orobanche australiana*, 123; *cernua*, 123.  
*Orochlesis*, 327; *O. delta*, 328; *munda*, 328; *posticalis*, 327.  
*Orthoceras strictum*, 51.  
*Ouroporopterus squamiventris*, 367.  
*Oxalis flava*, 121.  
  
*Pachyneuronella*, 102; *P. viridis*, 102.  
*Pachyporopterus humeralis*, 369.  
*Paleticus basalis*, 371; *convexicollis*, 370; *cordipennis*, 372; *inflatus*, 250; *invidus*, 304; *lutulentus*, 249; *subreus*, 372; *subparallelus*, 372.  
*Paletonidistus foveicollis*, 240; *trisinuatus*, 344.  
*Paranusia*, 97; *P. longicarpus*, 98.  
*Parasolindenia*, 90; *P. hemiptera*, 90.  
*Paridris queenslandica*, 148; *rufinotum*, 177; *tridentata*, 148.  
*Parooderella*, 88; *P. aptera*, 88.  
*Paruriella*, 107; *P. australiensis*, 107.  
*Pururios*, 84; *P. australiana*, 84.  
*Pectinella antarctica*, 1.  
*Pevilampus australiensis*, 76; *mitta-gongensis*, 76; *tasmaniensis*, 75.  
*Perissops albonotatus*, 326; *granicollis*, 325; *granulatus*, 326; *iliacus*, 305; *medionotatus*, 322; *multimaculatus*, 326; *ochreonotatus*, 201; *parvus*, 203; *piscicarpus*, 324; *tar-salis*, 323.  
*Pezichus decipiens*, 233; *parallelis-tris*, 340.  
*Phanurus giraulti*, 159; *longicornis*, 161; *longicarpus*, 160; *longipennis*, 160; *montanus*, 159; *nelsonensis*, 160; *niger*, 158; *nigricarpus*, 160.  
— Table of Australian Species of, 161.  
*Phæoglymma*, 415; *P. longirostris*, 415; *mixa*, 280.  
*Phyllaxeroxenoides*, 82; *P. niger*, 82.  
*Phylloxeroxenus fuscipennis*, 81.  
*Platygermus annulicornis*, 78; *australiensis*, 78; *tasmaniensis*, 79.  
*Platyporopterus fetus*, 365.  
*Platyselio mirabilis*, 132.  
*Platyteleia*, 153; *P. latipennis*, 154.  
*Platytenes*, 276; *P. varius*, 276.  
*Platogyron fasciatipennis*, 153.  
*Podagrionella hyalina*, 80.  
  
Pollination in Certain Australian Orchids, 48.  
*Polynemoides*, 65; *P. varicornis*, 65.  
*Poropterellus abdominalis*, 368.  
*Poropterus*, 347; *P. basipennis*, 352; *bisignatus*, 348; *conifer*, 359; *constrictifrons*, 241; *conceus*, 244; *crassipes*, 356; *exitiosus*, 347; *foveipennis*, 348; *humeralis*, 348; *latipennis*, 348, 354; *magnus*, 350; *mollis*, 358; *multicolor*, 357; *ornaticollis*, 243; *parvidens*, 242; *platycleres*, 348, 353; *posticalis*, 348; *python*, 305, 348; *rubeter*, 245; *simsoni*, 358; *stenogaster*, 349; *triforeiventris*, 355; *variabilis*, 348.  
*Prasophyllum gracile*, 54.  
Proceedings, Abstract of, 450.  
Proctotrypodea, Australian, 130.  
*Protopalus horticornis*, 235; *schonherri*, 344.  
*Psepholasoma*, 439; *P. rostrale*, 440.  
*Psepholax*, 436; *P. basalis*, 437; *lateripennis*, 437; *marmoratus*, 438; *subconicollis*, 436.  
*Pseudapries humeralis*, 419; *squamiscriatus*, 418.  
*Pseudencyrtella*, 113; *P. fasciata*, 113.  
*Pseudometyrus bicaudatus*, 424; *laminatus*, 425.  
*Pseudomydaus tenuis*, 376.  
*Pseudonidistus calceps*, 239.  
*Pseudoporopterus*, 363; *P. irrasus*, 246; *sulcifrons*, 363.  
*Pseudotherbus cylindricus*, 440.  
*Psilogaster pulcher*, 93; *theocles*, 93.  
*Psilogasteroides*, 93.  
*Pterosemoides*, 103; *P. flavipes*, 103.  
*Pterostylis cyenocephala*, 126; *parviflora*, 127.  
Pulleine, Dr., Observations on a Visit to Queensland, 450.  
— Exhibits: phallocrypt from Dutch New Guinea, 455; foliage and inflorescence of *Pisonia brun-niana*, 453.  
*Quadrastichodella*, 69; *Q. bella*, 69.  
*Quadrastichodes*, 68; *Q. cyanetiviridis*, 68.  
*Quadrastichus*, 67; *Q. nigrinotatus*, 67.  
  
*Rhabdocnemocis*, 238; *R. posterus*, 238.  
*Rhionopeltella filia*, 109; *reticulata*, 71, 109.  
*Risikomorpha*, 155; *R. mantis*, 156.  
Rogers, Dr. R. S., Additions to South Australian Orchideæ, 125; Mechanism of Pollination in Certain Australian Orchids, 48.  
— Exhibits: herbarium specimens illustrating a method for preserving the natural colours of plants when dried, 451.  
*Romilius duris*, 153.

- Roptoperus basalis* 391; *brachyphalus*. 392; *calceus*. 262 *fuliginosus*. 390; *longus*, 391; *pullidicornis*. 393; *scutellaris*, 262; *terre-reginæ*, 393.
- Scelio australensis*, 135; *australis*. 135; *australis*, 135; *bipartitus*, 135; *chortoicetes*, 135; *flavicornis*, 136; *froggatti*, 135, 136; *fulgilus*, 135; *gobar*, 135; *nigricornis*, 136; *nigri-scutellum* 137; *ovi*, 136; *pilosus*, 137; *pulehellus*, 135.
- Table of Some Australian Species of. 137.
- Sceliomorpha flavipes*, 139. *rugulosa*. 139.
- Scelioninæ*. Table of Australian Genera of. 130.
- Scientific Research, Grants in Aid of, 456, 457, 461.
- Scotinocis*, 428. *S. sagittifer*, 429.
- Secodes sumneri*, 70.
- Sophronocis*, 228; *S. albonotatus*, 228.
- Sphegigasteroides*, 76; *S. rufinotum*, 77.
- Stanley, E. R., Exhibits: Rocks from oil-bearing strata in New Guinea, 454.
- Stilbula australiana*, 93. *bidentata*, 92.
- Stomatoceræ australiensis*, 73; *leai*, 73.
- Stomatoceroideis rubripes*, 75.
- Swainsona oliveri*, 121.
- Sympiezoscelsus norfolcensis*, 432; *spencei*, var. *minor*, 433.
- Synnotia bicolor*, 123.
- Systasis henrici*, 106.
- Systole opus*, 115.
- Tapinocis*, 405; *T. corticalis*, 406; *scutellaris*, 407; *subapicalis*, 408.
- Telenominae*. Table of Genera of. 157.
- Telenomoides*, 163; *T. angustipennis*, 169; *bicolor*, 169; *flavipes*, 168; *giraulti*, 169; *insularis*, 169; *nigricornis*, 170; *nigricoxa*, 170.
- Table of Species of. 170.
- Telenomus charmus*, 162; *ctatus*, 162; *japyx*, 162; *odyssea*, 162; *augrus*, 163; *æcleus*, 163; *ædipus*, 164; *æneus*, 164; *ænone*, 165; *ænopius*, 165; *oguges*, 166; *olympus*, 166; *omphale*, 166; *ophion*, 167; *oreus*, 168; *orestes*, 167; *orithyia*, 180; *ormenis*, 181; *orodes*, 181; *orpheus*, 181; *osiris*, 180.
- Table of Australian Species of. 168.
- Tentegia cycloptera*, 408; *favosa*, 305.
- Tepper, J. G. O., Exhibits: photograph of *Yuoca alvifolia*, also seeds of *Stapelia buffonia*, 454; stereoscopic views, 458.
- Tetrastichella*, 108; *T. fuscipennis*, 108.
- Tetrastichus mittaougensis*, 68.
- Thanks. Votes of. 459.
- Thelymitra autemifera*, 56; *fusco-lutea*, 58; *luteociliatum*, 57; *macmillani*, 57; *venosa*, 60.
- Therebriosoma variegatum*, 296.
- Trichamarygmus*, 46; *T. pilosus*, 46.
- Triptocis*, 271; *T. puncticollis*, 272.
- Trisetum pumilum*, 123.
- Tumidicoxa ruficornis*, 74. *ruffemmu*, 74.
- Tumidicoxella*, 74. *T. australiensis*, 75; *nigricoxa*, 74; *tasmanensis*, 75.
- Tychreus*, 290; *T. aberrans*, 431; *caninus*, 432; *discicollis*, 292; *in canus*, 293; *insularis*, 430; *lanifer*, 291; *latifrons*, 294; *longicornis*, 292; *nigronotatus*, 430; *reversus*, 290; *sallatus*, 291.
- Tylocis*, 423; *T. squamibundus*, 423.
- Tyrtæoscellus*, 225; *T. alternatus*, 338; *attenuatus*, 227; *coralis*, 226; *nigrofasciatus*, 227.
- Table of Species of. 226.
- Tyrtæosus aberrans*, 219; *alternatus*, 207; *apicicollis*, 215; *basiventris*, 217; *bifasciatus*, 336; *bifoveiceps*, 211; *birulneratus*, 210; *brevisrostris*, 213; *cinerascens*, 337; *concinus*, 213; *flaronotatus*, 203; *foveipennis*, 209; *foveiventris*, 216; *ichthyosomus*, 337; *imitator* var. *norfolcensis*, 338; *maerops*, 335; *majorinus*, 204; *mirtus*, 334; *modicus*, 215; *nigromaculatus*, 205; *pardalis*, 337; *pulcher*, 332; *punctirostris*, 208; *simulator*, 337; *squamiceps*, 212; *squamivarius*, 332; *subopacus*, 206; *trianguliferus*, 330; *trilinealbus*, 219; *vetustus*, 337.
- Table of Species of. 220.
- Utrillaudes*, 106; *U. fulripes*, 107.
- Verco, Dr. J. C., Note on *Harpa* (*Eocithara*) *punctata*, 446; Note on *Lasæa scalaris*, 448.
- Exhibits: dredged specimens of cowries illustrating the effect of depth on colour, also shells from Japan, 451; penguin from St. Francis Island, 452; models of protozoans, 457; polyzoa and Mitra, 458; *Turricula teresia* and *Lasæa scalaris*, 459.
- White, Capt. S. A., Exhibits: birds from Flinders Island, 453; various birds, 456; ground birds inhabiting saltbush country, 457.
- Wiburdia dentipes*, 433.
- Xanthosomoides*, 80.
- Xestocis*, 434; *X. castaneus*, 435; *niger*, 434.
- Zietz, F. R., Exhibits: nest of tree swallow in peculiar position and hybrid duck, 452; an introduced Hibiscus, 456; snakes, lizards, and a spider which at rest mimicked a broken twig, 457, 458.



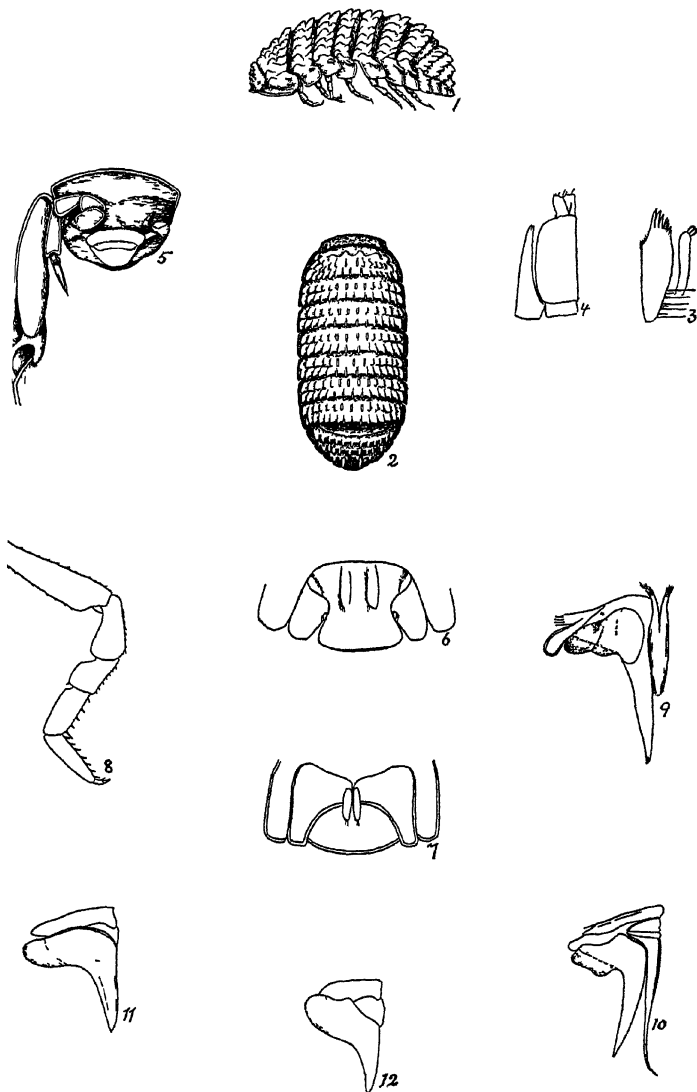




*Oniscus Myrmecophilus*, n. sp.

*Cubaris Minuta*, n. sp.

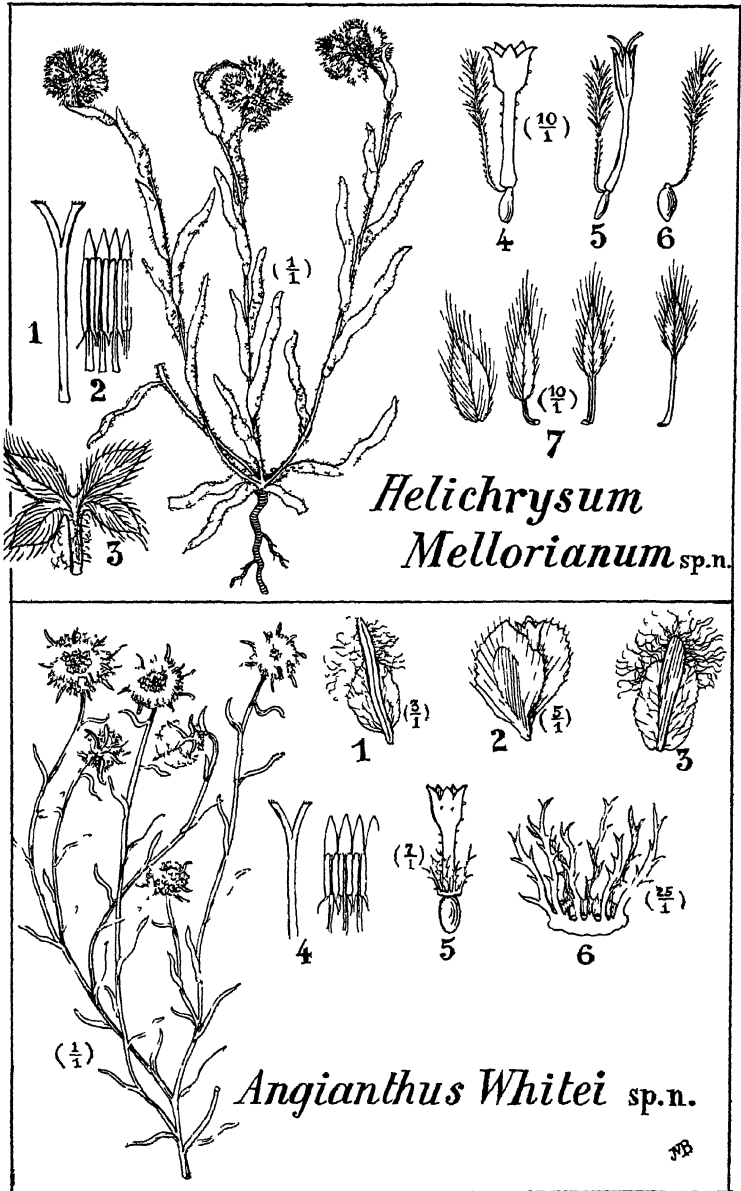




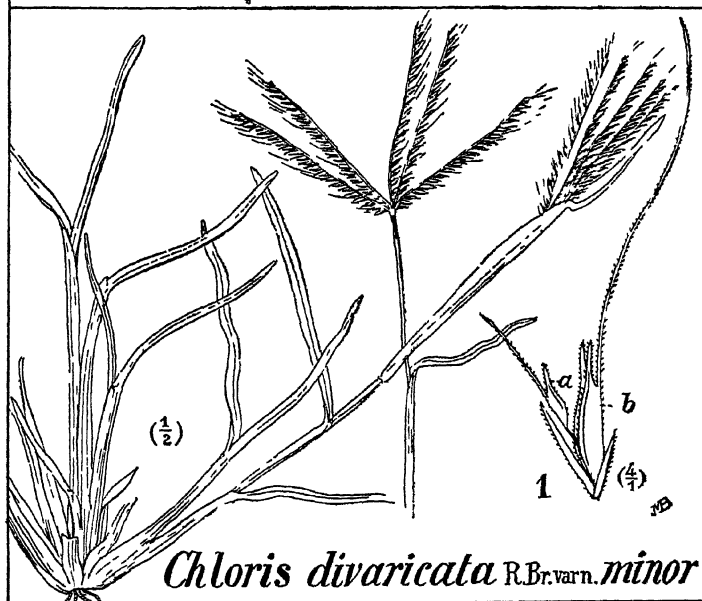
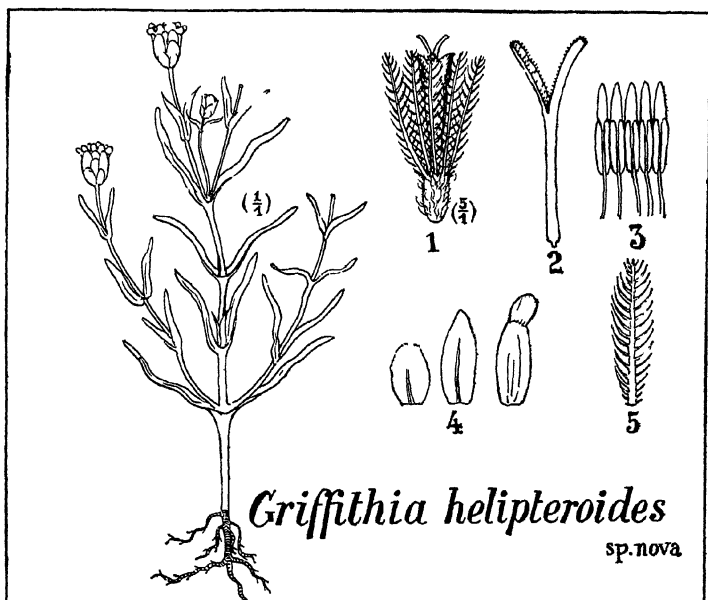
*Cubaris Commensalis*, n. sp.



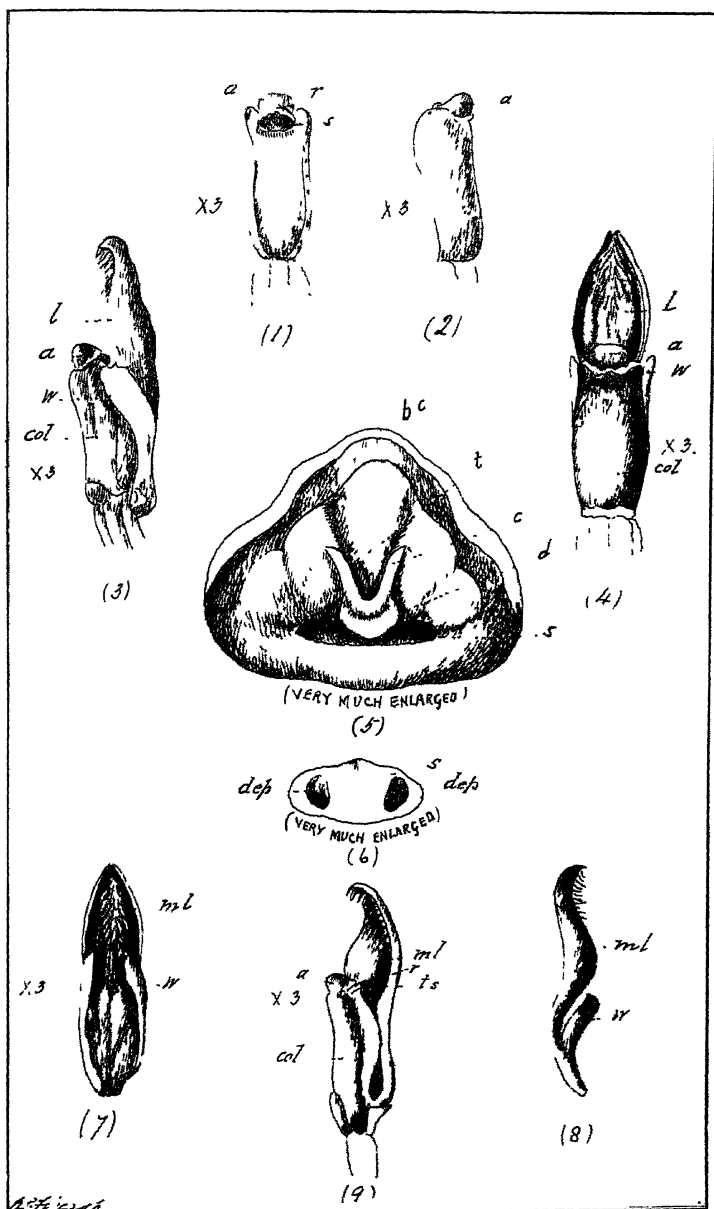






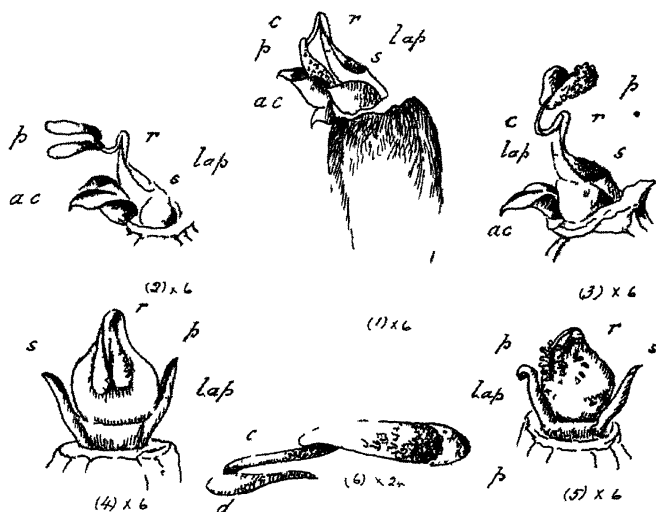






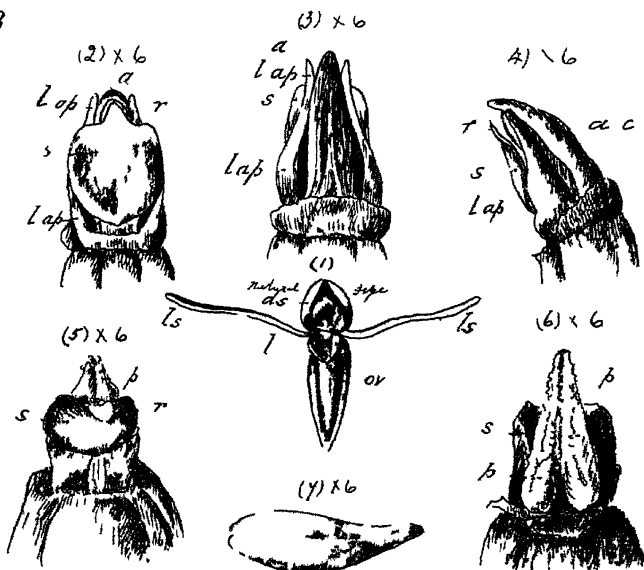


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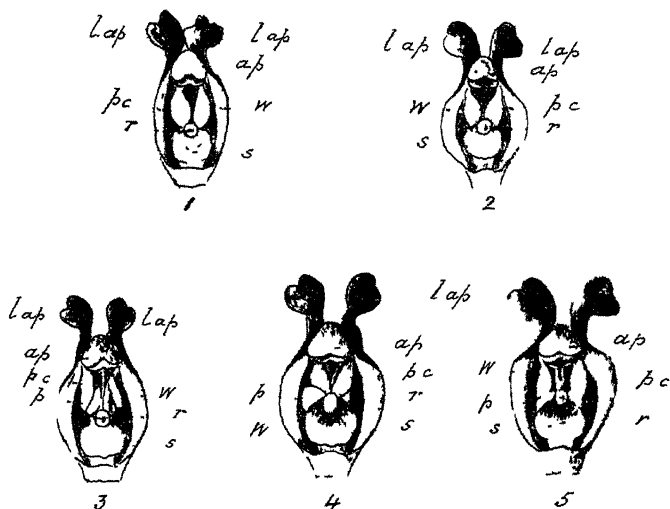


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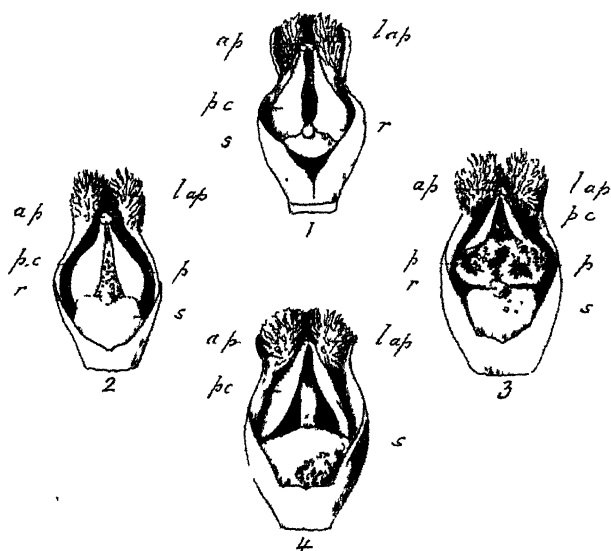




A



B



M.C. Mansel



